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Monsanto

# ANNUAL REPORT

1958

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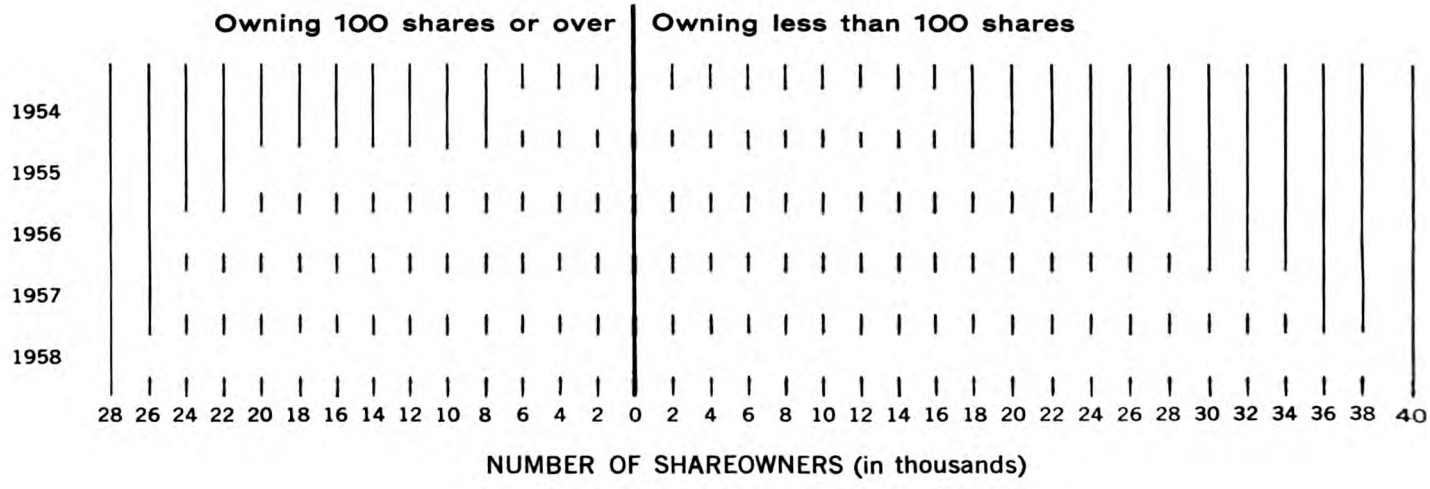
*The next Annual Meeting of the shareowners of the Company is to be held on Wednesday, March 25, 1959, at the Company's General Offices, 800 North Lindbergh Boulevard, St. Louis, Missouri. A formal notice of the meeting, together with a proxy statement and form of proxy, will be mailed to each shareowner.*

## SHAREOWNERS OF RECORD

| | 1958 | | 1957 | | 1956 | | 1955 | | 1954 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number of Shareowners | Number of Shares | Number of Shareowners | Number of Shares | Number of Shareowners | Number of Shares | Number of Shareowners | Number of Shares | Number of Shareowners | Number of Shares |
| Men | 24,990 | 4,752,196 | 22,877 | 4,811,506 | 20,412 | 4,788,326 | 16,702 | 4,536,291 | 8,572 | 1,002,957 |
| Women | 21,460 | 3,678,163 | 20,017 | 3,799,064 | 18,433 | 3,667,225 | 15,149 | 3,627,534 | 9,135 | 883,346 |
| Joint Accounts | 11,973 | 724,561 | 9,756 | 648,250 | 7,641 | 563,826 | 5,147 | 465,640 | 1,729 | 62,279 |
| Charitable Institutions | 265 | 179,961 | 288 | 206,025 | 145 | 147,082 | 154 | 133,830 | 133 | 44,429 |
| Educational Institutions | 114 | 131,892 | 139 | 145,224 | 117 | 117,618 | 105 | 126,631 | 89 | 40,414 |
| Estates and Trusts | 5,260 | 1,954,219 | 4,716 | 2,004,601 | 4,155 | 2,722,940 | 3,730 | 2,634,281 | 3,099 | 791,615 |
| Insurance Companies | 169 | 772,671 | 179 | 767,352 | 180 | 793,439 | 168 | 780,424 | 152 | 254,374 |
| Brokers and Nominees | 1,126 | 8,989,736 | 1,158 | 8,856,181 | 971 | 7,723,290 | 1,767 | 7,738,397 | 894 | 2,022,934 |
| All Others | 1,070 | 1,073,201 | 906 | 988,426 | 964 | 922,715 | 694 | 955,917 | 419 | 167,703 |
| Total | 66,427 | 22,256,600 | 60,036 | 22,226,629 | 53,018 | 21,446,461 | 43,616 | 20,998,945 | 24,222 | 5,270,051 |



# TO THE SHAREOWNERS

Monsanto's 1958 performance, quarter by quarter, reversed last year's trend. The first quarter, traditionally our best in sales and earnings, was last year's best but 1958's poorest. Thereafter, each quarter this year reflected the nation's progressive recovery, and fourth-quarter sales and earnings, which were last year's lowest, were 1958's highest.

However, lower sales volumes in the year's earlier months and softening of some selling prices, notably those of plastics and refined petroleum products, were detrimental to a satisfactory year. Earnings were reduced, too, by a nine-week strike at our important Monsanto, Illinois, plant. On the other hand, some affiliated companies bettered their 1957 results. These and other factors are discussed more fully in sections which follow, for our product groups and our affiliated companies reacted uniformly in neither recession nor recovery. And in these discussions we must acknowledge, with regret, that we often have used names and terms which may be unintelligible to many readers. However, our products are chemicals and they have, in many cases, obscure uses; hence, there is no alternative but to describe our chemicals by their chemical names, their technical uses in technical terms.

**Monsanto shareowners' net interests were:**

| | 1958 | 1957 | Increase *Decrease* |
|---|---|---|---|
| **Sales** | $714,410,345 | $708,004,936 | $6,405,409 |
| **Income after taxes** | 42,856,916 | 48,877,895 | *6,020,979* |
| **Earnings per share** | 1.93 | 2.20 | *.27* |

These sales and earnings include not only those of the parent company but those of its domestic and foreign subsidiaries and one-half of the sales and earnings of 50 per cent-owned associated companies. Comparative balance sheets, complete income statements and other data of this consolidation appear on pages 16 to 19, inclusive.

Sales of the parent company and its domestic and Canadian subsidiaries *alone* during 1958 were $547,955,647, a decrease of 3.4 per cent from sales of $567,116,091 in 1957. Earnings of this group *alone* were $34,549,517, equal to $1.55 a share in 1958, and $37,416,151 and $1.68 a share in 1957. Included are dividends and interest of $4,272,951 received in 1958 from investments in unconsolidated subsidiary and associated companies. In 1957, such receipts were $1,873,176.

## CAPITAL INVESTMENT

We continued to invest relatively large sums to create more efficient plants, facilities for new products and, in some cases, to provide expanded output. Such 1958 expenditures for the parent company, its subsidiaries and its proportionate 50 per cent share of such expenditures by associated companies totaled $72,604,000. Many projects were involved, none dominated; some are mentioned in the product group and associated company reviews which follow. Depreciation and depletion in 1958 were $60,559,000. In 1957, capital investment was $90,085,000, and depreciation and depletion, $53,331,000.

Of the above expenditures, $42,588,000 was for the account of the parent company and its domestic and Canadian subsidiaries, including $8,032,000, the capitalized portion of Lion Oil's costs for development of oil and gas properties. Of the balance, our unconsolidated subsidiaries accounted for $15,472,000, and our portion of the expenditures made by 50 per cent-owned associated companies was $14,544,000.

In addition, $25,933,000 was invested in or advanced to subsidiary and affiliated companies by the parent company.

## MONSANTO'S OBJECTIVES

Management's prime objective has been, and is, to better the return on the company's invested capital. The year's profits, however, do not reflect the economies, increased efficiencies and manufacturing cost improvements which were accomplished, as these were more than offset by heavy idle plant charges as we and the nation as a whole reduced inventories, by substantial increases in our wages and some salaries which followed the national pattern upward, by higher transportation rates and, above all, by substantial reductions in the selling prices of many products forced by highly competitive markets. Our efforts were aided by lower prices for some important raw materials, but their costs to us fell neither as far nor as fast as did our prices to our customers. Better returns remain management's prime concern. Further efficiencies and new technologies will be introduced, as will new products and new applications which we anticipate will carry higher margins. Research also will continue to explore approaches toward achieving the objective.

Some of the 1958 achievements are detailed in the product group reviews which follow.

## INORGANIC CHEMICALS

### Phosphorus and Phosphates

Sales and profits of phosphorus and phosphate salts continued their steady growth. Since prices were stable, these achievements represent increased tonnages and lower manufacturing costs.

Demand for the principal products, such as sodium tripolyphosphate, tetra sodium pyrophosphate and calcium phosphates, remained strong; they enter detergent and food industries which were not affected by the recession.

Major technological improvements, which helped defray continuing increases in labor and raw material costs, were made in the phosphorus operations in Tennessee and Idaho.

Construction of a new plant for sodium tripolyphosphate in Long Beach, California, is scheduled for completion early in 1959.

### Nitrogenous Products

Lower consumption of nitrogenous chemicals, caused by adverse spring weather, reduced sales and earnings of this group slightly. However, greater sales of anhydrous ammonia and nitrogen solutions reflected the growing trend by the nation's farmers to apply these products directly to the soil.

In late fall, facilities for a much improved ammonium nitrate began operating at both El Dorado, Arkansas, and Luling, Louisiana. The new form, developed in our laboratories, does not cake under ordinary storage conditions; its greater density cuts handling costs.

A 100-ton-a-day urea plant came on stream at El Dorado; ammonia and carbon dioxide, raw materials for urea, are made at this location. This plant enables Monsanto to enlarge its services to agriculture. Urea is an important ingredient in mixed ruminant feeds, also. Furthermore, three operating divisions—Plastics, Organic and Inorganic — use urea in the manufacture of adhesives, textile finishes, binders for molding granulated wood, solid bleaches and other complex organic and inorganic products.

### Other Products

Sulfuric acid facilities at Avon, California, were expanded. Operating economies were achieved at Everett, Massachusetts, in new alum facilities; the product is used in paper.

Enlarged facilities for alkyl benzene, a basic product in detergent manufacture, began operation in August. Research resulted in a new type alkyl benzene which was introduced successfully during 1958.

*ACL-85* and *ACL-70,* chlorine carriers for use in dry bleaches and heavy duty scouring powders, introduced last year, continued to be well accepted. Expansion of manufacturing facilities is under way and two new products in this field now are being test marketed.

Production of quartz microtubing, so small that a 50-foot length is required to hold a drop of water, was initiated; it is useful for recovering helium from natural gas.

## ORGANIC CHEMICALS

Monsanto's hundreds of organic chemicals include the company's oldest products, as well as many of its newest. Because they are consumed by almost every major industry, organics are not very vulnerable to sharp declines in one or more groups of them. Hence, our organic sales almost equalled last year's record levels. Lower profits, however, were the consequence of competitive pricing and of the prolonged strike at Monsanto, Illinois. Research remained vigorous.

### Paper Chemicals

The raw materials position of *Mersize,* a fortified rosin size which gives water-resistance to paper and paperboard, was strengthened by the start-up of a new tall oil distillation unit at Nitro, West Virginia. The plant is jointly owned with Emery Industries, Inc., which will share its output. Filtered Rosin Products Company of Baxley, Georgia, was acquired to insure a gum rosin source. *Mersize* production will be augmented by plants being erected at Seattle, Washington and Nitro, West Virginia.

### Agricultural Chemicals

Monsanto's dominant position in phosphate insecticides—widely used in cotton, alfalfa, orchard and field crops — was reinforced by a new and expanded plant at Anniston, Alabama; manufacturing economies permitted substantial price reductions.

Enlarged and modernized laboratory and greenhouse facilities for agricultural chemicals research were opened at the 288-acre General Offices' location in St. Louis County.

Marketing of Monsanto-brand farm chemicals,

introduced in 1956, was extended nation-wide.

### Plasticizers

While sales matched 1957's levels, margins were lower—competitive pressure again.

To our line of more than 70 plasticizers—largest in the industry—three new ones were added: *Santicizer 409,* a polymeric plasticizer, gives permanent flexibility to vinyl plastic; *Santicizer 165* improves properties of plastics at low cost; DNODA gives plastics low-temperature flexibility. *Mod-Epox,* which makes liquid epoxy resins easier to use, cuts costs some 20 per cent, and enhances properties of the resins for electronics and other industries, was introduced. *Santonox* provides polyethylene with resistance to high temperatures; it was submitted to the Food and Drug Administration for clearance of its use in polyethylene food containers.

At Everett, Massachusetts, plasticizer facilities were expanded again.

### Functional Fluids and Petroleum Additives

Sales did not equal last year's because of lower lubricant production and aggressive competition. *Skydrol* fire-resistant hydraulic fluid has logged over one billion fireless flight miles in reciprocating engined aircraft, and a companion product, *Skydrol 500,* is standard for all U. S. turbojet airliners and optional for several foreign turbojets. *Coolanol-45* gained ground as a coolant-dielectric for electronic equipment important to air defense and space exploration. *OS-81,* the first fire-resistant turbine lubricant, was used successfully in a major gas turbine application.

Certain hydrocarbons proved effective as coolant-moderators for a nuclear power reactor in Atomic Energy Commission tests completed at mid-year.

To broaden our group of petroleum additives, we introduced *Santopoid 23-RI,* which became firmly established as an additive for new multi-purpose gear lubricants, including those for the new, controlled limited-slip axles. Custom-made gasoline additives were marketed in substantially increased volume.

Research facilities both for functional fluids and petroleum additives are being enlarged.

### Fine Chemicals

Increased sales of bacteriostats for deodorant soaps and detergents required an expanded plant.

Fundamental data obtained by our scientists was instrumental in creating a larger market for *MHA,* a synthetic protein supplement for poultry feeds. Manufacturing capacity will be augmented by a new unit at Nitro, West Virginia. Process improvements and growing demand permitted a price reduction which should broaden the market for *MHA.*

### Intermediates

Sales of intermediates—compounds halfway between raw materials and such varied end products as pharmaceuticals, dyes, paints and pesticides—were reduced because of the strike at Monsanto, Illinois, where many are made.

Expansion of a unit for para-nitrochlorobenzene, used in making pharmaceuticals, dyestuffs and other products, is nearing completion.

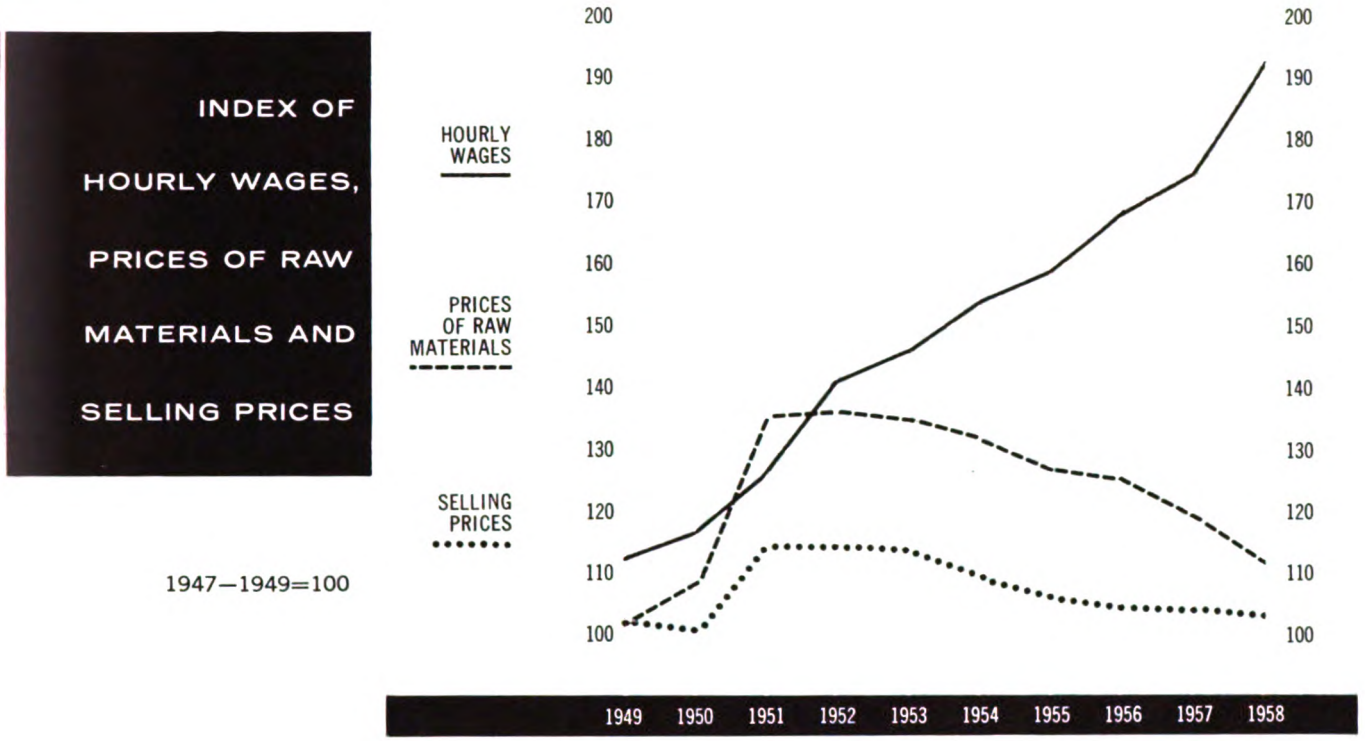
### Resin Materials

Rapidly growing use of polyvinyl acetate surface coatings doubled sales of dibutyl maleate and dibutyl fumarate. A new fumaric acid plant is under construction. Enlarged capacity for bisphenol "A", ingredient of epoxy resins for producing tough moldings for surface coating and adhesives, has been completed.

### Rubber Chemicals

Sales dropped as the rubber industry reflected decreased automobile production. However, replacement tires compensated in part.

Facilities for *Santoflex-GP,* a new anti-degradant




and anti-ozonant for tires and mechanical goods, came on stream. Sales of *Santoflex-DD,* a general purpose anti-oxidant and stabilizer for synthetic rubber, achieved high levels.

## PETROLEUM OPERATIONS

Reduced crude oil production and depressed prices of refined petroleum products caused an unsatisfactory year both for our Lion Oil Division and for the oil industry as a whole.

Several factors affected the American petroleum industry unfavorably: The recession lessened demand; high inventories of crude and refined products, backed up and swollen by large imports, depressed markets. The over-supply resulted in stringent state restrictions on amounts of oil permitted to be taken from domestic wells; production allowables in Texas, for instance, dropped from 173 days in 1957 to 122 days in 1958. In other states pipeline proration curtailed production. Depressed prices more than offset modest increases in sales of the El Dorado refinery and station markets.

During the latter part of the year there was some improvement in heating oil and kerosene prices, and improved demand resulted in increased crude oil production allowables.

Lion continued its search for oil and gas reserves here and abroad. Exploration expenditures for 1958 were $11,765,858.

Exploration was rewarding in Venezuela, where 11 successful wells were completed in a 2000-acre Lake Maracaibo concession in which Monsanto holds a 15 per cent interest. Fifteen successful completions were achieved in Canada, where an expansion of our activity is planned. Drilling continued on a 900,000-acre Bolivian concession, in

which Lion holds a 25 per cent interest. Exploration continued in Sicily, although several concessions have been abandoned after a succession of dry holes.

Within our borders, successful exploratory wells were completed in Oklahoma, Texas and New Mexico. In December, important oil and gas discoveries were made in La Platte County, Colorado; in Matagorda County, Texas; in Bienville Parish, Louisana, and in Simpson County, Mississippi. The company has substantial acreage holdings under and in the immediate vicinity of each discovery well.

Additions to oil and gas reserves in 1958 exceeded the year's withdrawals.

A catalytic reformer now on stream at the El Dorado refinery places Lion in position to meet anticipated demands for even higher octane motor fuels. An expansion of the refinery, scheduled for completion in 1960, is under way; its rated daily thruput will increase from 29,000 to 33,000 barrels. Operating economies will result and, as part of Lion's program for channeling its products toward chemicals, the addition will provide for the production of propylene tetramer, which is used by our Inorganic Chemicals Division—the first important step in our program to create our own hydrocarbon infrastructure.

Expansion of station marketing is being directed toward the construction of outlets with high volume potential. In order to achieve better returns on existing stations, unprofitable outlets are being eliminated and changes are being made to increase the sales of others.

## PLASTICS

The plastics industry has become most competitive. New manufacturers, attracted by its growth, have brought in fresh capacity; imports captured some markets and some large plastic consumers, striving to offset low margins, elected to manufacture their own plastics. These developments forced price reductions, lower volume, reduced earnings. Important technological improvements offset, only partially, shrinking margins.

The heightened competition put severe pressure on research, engineering and product development groups. New materials were produced for a growing spectrum of specialized end uses; new markets were developed.

Forty-seven new types were introduced during the year. Included were a high-impact sheet extrusion grade *Lustrex* polystyrene, which can be formed into a variety of strong, lightweight and colorful products; a static-dissipating *Lustrex* for dust-prone products such as display signs; and a low-stress oriented transparent styrene sheet which promises to capture a good share of the fast-expanding, "see-it-before-you-buy" packaging market.

The application of *Ultron* vinyl film as a surface laminate to replace printed felt-base products in low-cost floor coverings upgraded such coverings by utilizing the decorative assets and wear-resistance of printed vinyl film. *Fome-Cor,* a sandwich board made of foamed styrene surfaced with kraft paper and developed jointly by Monsanto and St. Regis Paper Company, can be fabricated into containers which are competitive with specialty cartons and boxes. These lightweight, durable, moisture-resistant containers are being used for cut flowers, fresh fruits and vegetables; an expanding market is foreseen.

Good progress was made in polyethylene; the Texas City facilities operated profitably and additions are under way. Our product range was broadened to include all important high quality types. Bags fabricated of *Monsanto Polyethylene,* with superior moisture and insect resistance, have been introduced as shipping containers for a variety of industrial and agricultural products, including some of Monsanto's.

An improved *Opalon* vinyl plastisol is finding

wide usage in metal coating, fibers and fabrics for both decoration and protection. A new, stable, water-borne phenolic liquid resin for shell molding was introduced to foundries. A high-temperature phenolic resin was developed for aircraft rockets and missiles. *Lytron* emulsions, based on styrene latex, found new uses in paint, paper and shoe industries.

Acrylonitrile is used as a raw material for synthetic fibers. Its production was expanded, costs were reduced. It was moved overseas in tankships and domestically in barges.

The new plant at Trenton, Michigan, for *Saflex* vinyl butyral—which imparts shatter-resistance to laminated safety glass—was utilized fully for the first time during the fall surge in automotive production.

## RESEARCH

Some $23.4 millions were invested in research, development, patent work and basic engineering for our own account; in 1957, such investment was $22.7 millions.

Of the sum spent this year for research, 24 per cent was for new product research; 34 per cent for exploratory research; and 42 per cent for improvement of present products. New product research is effort aimed at bringing a discovery to commercial fruition once a specific new product for a foreseeable use can be delineated. Exploratory research is aimed at uncovering basic new information such as new chemical reactions, new compounds, new uses and new technologies. Ideally, results of exploratory research can be patented, helping to insure opportunity to recover costs of innovation and to achieve greater profitability. In 1958, Monsanto was granted 269 U.S. patents and 273 foreign patents.

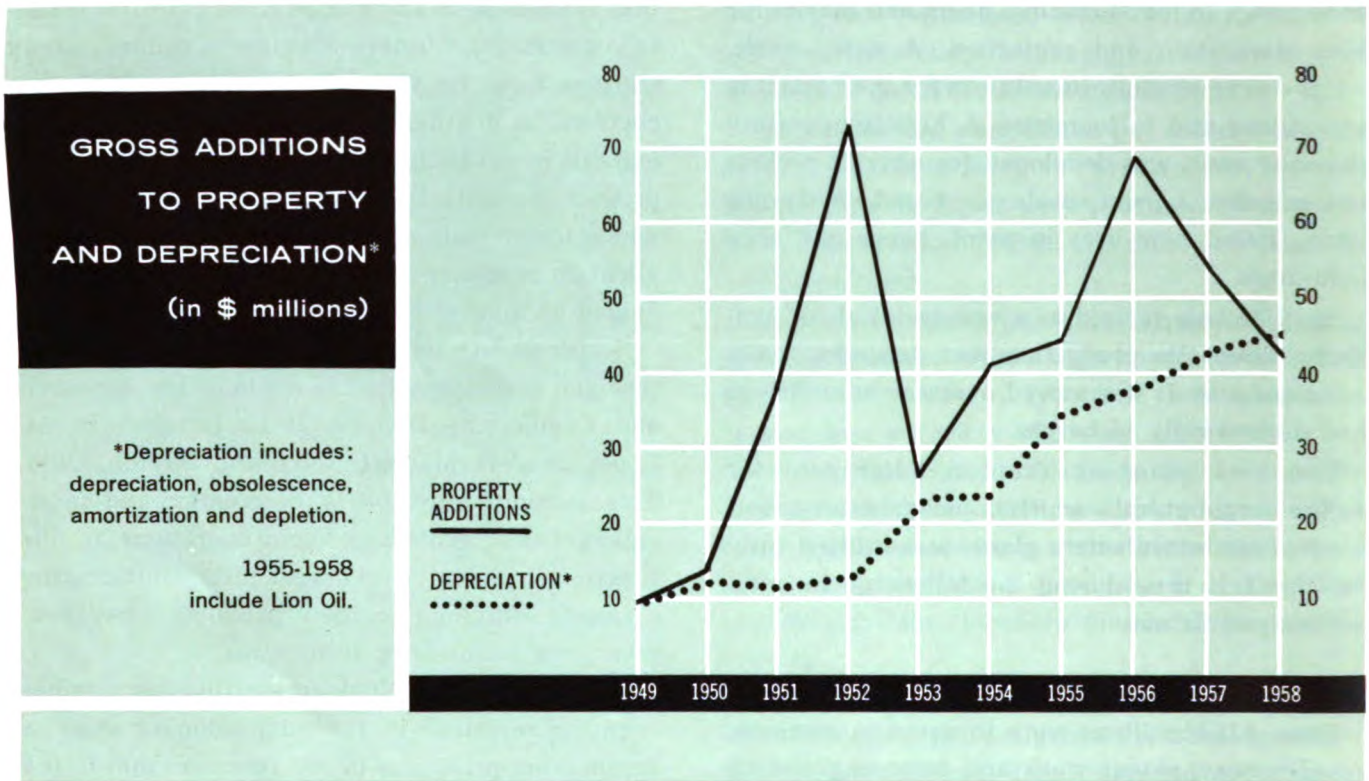
Because our products are marketed in a highly competitive environment, it also is in the field of "improvement of present products and processes" that both research and engineering manifest themselves as major counter-measures to reduced profit margins faced by virtually every successful new chemical as it suffers the profit erosion almost inevitable in our industry. Alert research anticipates product maturity by technological improvements which lower costs and enhance quality. Then application research seeks new markets previously denied because of former costs.

Responsibility for exploratory and fundamental research is the principal function of the Research and Engineering Division at its locations in St. Louis, Everett, Massachusetts, and Dayton, Ohio. This division's objective is the creation and application of new technology to our operations; in this function it works closely with the manufacturing divisions searching for new products, new processes, new engineering techniques.

The Research and Engineering Division also has been instrumental in the adaptation of systems engineering principles to our processes and in the application of large digital and analog computers to complex technical problems. A large manufacturing unit, already highly instrumented, soon will be placed under direct, on-line computer control. The electronic computer will observe continually the process instruments, make numerous calculations and adjust the controls to achieve maximum capacity at minimum cost. This unit will be, to the best of our knowledge, the world's first truly "automated" chemical plant.

Last year we announced the establishment in Zurich, Switzerland, of a laboratory to conduct exploratory research. This facility, staffed by European scientists under the guidance of an experienced Monsanto research director, is operating satisfactorily and promises to justify the venture.

We continue to operate Mound Laboratory at Miamisburg, Ohio, where contract research and production are carried on for the Atomic Energy Commission; our Everett, Massachusetts, labora-




tory is being devoted almost exclusively to contract research for the U. S. government.

Research is the most dynamic aspect of the chemical industry. Dollar investment is but one measure of Monsanto's imperative absorption in it. During the past five years, while the company's total employment increased 25 per cent, technical personnel increased 35 per cent; and technical personnel in research increased 44 per cent.

## OVERSEAS

To give our shareowners a fuller grasp of Monsanto's operations in two hemispheres, the accompanying pictorial Annual Review covers our manufacturing activities in 11 foreign countries.

Greater sales by affiliated foreign companies more than offset a decline in our exports. The latter reflected increasing self-sufficiencies of many foreign countries as plants built by our affiliates and others provided not only for the internal requirements of these countries but, in many cases, export surpluses as well.

Combined earnings of those foreign operations included in the world-wide consolidation decreased slightly because of extreme competition in world markets and a somewhat slower industrial pace which prevailed in many large nations.

The establishment of the European Common Market by France, West Germany, Italy, Belgium, Holland and Luxembourg dominates the politico-economic unfoldments of our time. The creation of supranational authorities and the gradual abolishment of tariffs among these nations, together with the erection of a common exterior tariff wall, will influence and affect the development and economies of all nations outside this portentous community. Implementation of the Common Market has begun; tariffs of member nations were cut 10

per cent and import quotas liberalized at the beginning of 1959.

Advent of the European Free Trade Area, which was projected to include the Common Market, with as many as 11 other European nations, has been postponed by the inability of Britain and France to agree upon terms. While it still looms as a possibility, the prevailing ambivalence exhibited by these nations points, at this writing, toward a somewhat fugitive middleground.

Monsanto has been keenly aware of these developments and of the desire of many nations to become chemically self-sufficient. It is now in position to reap some advantage from these rather swift changes in our groaning world. Our operations in United Kingdom date from 1920; now Monsanto Chemicals Limited has 4200 employes. Its plants are in Newport, on the Bristol Channel, and in Ruabon, North Wales. This company, in which we hold two-thirds of the common equity, makes a variety of organic chemicals, plastics, pharmaceuticals, fine, heavy and industrial chemicals; its new polyethylene plant at Fawley, near Southhampton, began operating in January, 1959. It owns a one-third interest in a styrene monomer plant near Edinburgh. Monsanto Chemicals Limited's sales and earnings fell short of those of 1957, as credit stringency, reflecting the British government's anti-inflation drive, reduced the pace of British industry.

Of importance to our shareowners, also, is our position in the European Common Market. In northern Italy, locally produced natural gas is available at a price low for Europe, and Near Eastern oil costs less at Italian ports than Texas crude at the wellheads. These resources are significant, as more than one-fourth of all chemicals produced in United States derive from petroleum or natural gas. We now hold 40 per cent of the equity in Sicedison S.p.A., an important Italian chemical company which has two substantial plants in northern Italy —in Mantova in the Po Valley, and in Porto Marghera, which is the industrial suburb of Venice. Already a diversified manufacturer of organic and inorganic chemicals, plastics and petrochemicals, Sicedison in 1958 began producing ethylene, propylene and propylene tetramer, products with which Monsanto has had ample experience. Under construction are plants for plasticizers, fluorine derivatives, expanded acrylonitrile capacity and several other products. Near Milan, a substantial research laboratory is nearing completion.

Sicedison's sales have been climbing steadily and, despite heavy start-up expenses, its income has increased. We expect to subscribe to our proportion of new shares which this company will issue soon.

In France, jointly owned Societe Monsanto-Boussois set new sales records. Expansion of its plant, now in progress, will provide additional capacity and permit manufacture of products new to the French market. To help insure availability of raw materials, Monsanto-Boussois procured an interest in Ethyl-Synthese, presently France's only styrene monomer producer.

Monsanto Canada Limited, a wholly-owned subsidiary, experienced market problems related to ours but, while its sales were less than in 1957, its income was a little greater.

Earnings of Mitsubishi-Monsanto Chemical Company Limited, the jointly owned Japanese company, were affected adversely by low internal prices, but the outlook is improving. Capacity for newer types of polystyrene is being erected and economies in the production both of polystyrene and vinyl sheeting materials are projected by new technologies.

Monsanto Chemicals (Australia) Limited, in which our direct and indirect interest is some 77 per cent, achieved new highs both in sales and income. Through purchase of the complementary facilities of Beetle Elliott Pty. Ltd., Monsanto (Australia) almost doubled its physical plant. It

is one of Australia's largest producers of industrial, pharmaceutical and plastic products; its expectations are linked to the nation's current industrial boom.

Monsanto Mexicana S.A., a wholly-owned subsidiary, experienced record sales and income. It is constructing plants for high-grade phosphoric acid and for sodium tripolyphosphate, the latter for the local detergent industry.

Wholly-owned Monsanto Argentina S.A.I.C. had a very successful year, but in dollars its profits suffered attrition from peso inflation. It is now building plants for vinyl compounds and the plasticizers required for them, and it is scheduled to manufacture soon phthalic anhydride, a raw material for plasticizers. Vinyl resin, the other major raw material required for vinyl compounds, will be manufactured in a plant now under construction at Mendoza, which lies at the foothills of the Andes, by Monsanto-Andes S.A.I.C., a newly-formed partnership with Carbometal S.A., Argentina's largest producer of calcium carbide. Monsanto-Andes also will produce chlorine for its own use and caustic soda for the market.

In Spain, our affiliate, Etino-Quimica S.A., in which we hold 25 per cent interest, began operation of a unit which added new products to its vinyl resin line; also on stream was a new polystyrene plant producing diversified forms of this plastic.

Monsanto has, also, small minority interests in another French company — Societe des Produits Chimiques Coignet-France—a producer of phosphorus and its derivatives; in Sweden, in Belgium, and is co-owner, with our British affiliate, of Monsanto Chemicals of India Private Ltd.

The gross assets of companies outside United States in which Monsanto holds, directly or indirectly, 40 per cent or more of the equities, approximate $250,000,000. A substantial part of these assets —more than 70 per cent—is in Great Britain and Western Europe.

As is customary in many foreign countries, these companies operate with a high ratio of debentures, preference stock and overdrafts to common equity. After providing for such senior securities, our portions of the net book values approximate $60,000,000.

## 50 PER CENT-OWNED DOMESTIC ASSOCIATED COMPANIES

**The Chemstrand Corporation's** quarterly sales and earnings paralleled Monsanto's, as the textile industry usually heralds changes in the nation's economy. Chemstrand's upsurge began in April and culminated in record fourth quarter sales and earnings of both nylon and *Acrilan* acrylic fibers.

This year, as last, Chemstrand has issued its own Annual Report—a copy of which, for shareowners, was enclosed in the envelope which contained this Report. As disclosed in Chemstrand's Report, consolidated earnings were $18,355,000. In 1957, they were $18,813,000. In December, Chemstrand paid its first dividend to its owners, Monsanto and American Viscose Corporation. Monsanto received $2,500,000, the net of which, after providing for intercorporate dividend tax, was $2,305,000. In addition, Chemstrand retired $2,500,000 of subordinated notes held by us and an equal quantity held by Viscose.

**Mobay Chemical Company** passed a milestone in the fall; a long-delayed profit breakthrough was achieved. Operating profits were realized during the fourth quarter, but they were insufficient to offset the year's early losses and write-offs attributable more properly to prior years.

The volume of urethane foams used by automotive, furniture and other industries expanded as an increasing number of fabricating companies found them satisfactory and economical. In addition, these foams have emerged as versatile engineering materials in such diverse applications as insulation in hulls of nuclear submarines, one-

celled refrigerated transport units, cushioning in jet airliners and protective packaging for missiles.

In the third quarter, Mobay reduced sharply the price of its key product, tolylene diisocyanate, and, during the fourth quarter, it announced the development of a greatly simplified system for the production of polyether foams — which reduces the costs and complexity of producing these foams. The lower price, coupled with this simplified system, is expected to accelerate urethane's growth. In anticipation, Mobay completed a sizeable expansion of its facilities.

Tough, castable urethane elastomers, marketed under our partner's (Farbenfabriken Bayer A.G.) trademark, *Vulkollan,* have created widespread interest. The transition of *Vulkollan* from developmental to commercial status occurred in a number of applications in the automotive, shoe and materials-handling industries. *Vulkollan* looms as an important partner to Mobay's foaming materials.

**Shawinigan Resins Corporation's** sales were slowed by customer inventory reductions and low automotive output. Its vinyl butyral resin, which is converted by Monsanto into *Saflex* film for laminating safety glass, is necessarily sensitive to fluctuations in the auto industry. With the new Trenton, Michigan, plant, which came on stream in the latter part of 1957, now operating efficiently, Shawinigan offers Monsanto and other customers two sources of supply.

Sale of Shawinigan's polyvinyl alcohol, *Gelvatol,* is steadily increasing from the new plant at Springfield, Massachusetts. This product finds applications in surface-coatings, adhesives, textile sizing, paper coatings and film. In addition to domestic competition, *Gelvatol* has been meeting aggressive competition from imports. Nevertheless, Shawinigan's sales of the product increased, although at lower prices. Two new polyvinyl acetate emulsions were introduced—one for low-cost, high-quality interior paints, the other a base for water-dispersed gloss paints.

Shawinigan made a modest profit.

**Plax Corporation** increased its sales and earnings slightly. Polyethylene squeeze bottles continued to invade markets formerly served exclusively by metal and glass containers. Economical multicolor printing was achieved; Plax now offers up to four-color offset printing on containers at prices competitive with those of paper or foil labels. To broaden markets for *Polyflex* — a biaxially oriented polystyrene sheeting—Plax introduced a thin gauge film competitive with cellophane in such applications as packaging overwrap, glue-sealed bags, envelope and carton windows.

## ANTI-TRUST MATTERS

In last year's report we advised that Lever Brothers Company had purchased the trademark and franchise to market the non-sudsing detergent *all,* which we had developed and marketed for several years successfully, but without commensurate profit.

In July, the Department of Justice filed a civil suit against both Lever and Monsanto, alleging that the transaction may lessen competition inasmuch as with *all* and its other products Lever may obtain a decisive advantage over other detergent producers.

Both Lever and ourselves will defend the arrangement which benefits both companies and which, we believe, is not disadvantageous to consumers of the product or to other detergent producers.

Monsanto is also one of the defendants in a suit brought by the Department of Justice against 29 companies engaged in marketing crude oil and petroleum products—the Department alleging conspiracies in fixing prices. Monsanto, with all other defendants, will contest the allegation.

## PERSONNEL

Of our 25 plants in United States and Canada, hourly paid production and maintenance employes are represented by locals of international labor unions in all but eight locations, which remain unorganized. Our relationships with all our employes are good to very good and, as a result of an intensive program, they are improving constantly. At all unionized locations, save one, expiring contracts were renewed, after appropriate bargaining. At the exception—Monsanto, Illinois—employes were on strike for nine weeks, the issue relating to introduction of procedures for reduction in costs. The union ultimately agreed to accept the majority of the company's procedures.

Throughout the company, personnel development has been receiving increased emphasis. In addition to on-the-job training, a Tuition Payment Program assists both hourly and salaried personnel who study job-related subjects at local evening classes. Extensive management training is provided to employes with such responsibilities.

The Academic Leave Program, designed to afford our scientists and technologists opportunities to up-date their formal education, permits selected personnel to attend universities for graduate work. Management training provides similar leaves for other individuals to attend recognized graduate schools of business administration.

Last spring, 125 key personnel attended the second term of Monsanto's own Advanced Management School at Excelsior Springs, Missouri, where three-week courses were administered by university professors. The enthusiasm of the enrollees for the courses and their better understanding of our business and objectives amply justified the school's cost.

Occasionally, educational leaves are granted to groups, such as the group of engineers which completed a one-year systems engineering course established by Monsanto at St. Louis University. An additional group is now enrolled in this course. The Key Scientist and Technologist Advancement Plan encourages personnel with exceptional creative gifts to follow their scientific leanings at will.

We report with gratitude that the recession, despite its effect on various elements of our business, caused virtually no dislocation of our loyal and capable people. Our personnel represent not only human ties, often of long standing, but a large investment in training and experience. It was Monsanto's philosophy, as we entered the recession, that it would be shortsighted to part with trained, efficient employes who were in such short supply in the immediate past and who might be needed again in the immediate future. Recovery is not yet complete, but our staff has been maintained almost intact.

The company experienced an excellent safety record. A frequency of .67 lost-time accidents per million man hours is the best ever achieved by Monsanto.

In March, the Board of Directors elected Vice Presidents John L. Gillis of St. Louis and T. M. Martin of El Dorado, Arkansas, to the company's Executive Committee, expanding its membership to seven.

The Board also elected Irving C. Smith of St. Louis a vice president; to succeed Martin, H. Harold Bible of El Dorado was elected a vice president and general manager of the Lion Oil Division and, to succeed Smith, E. J. Cunningham of St. Louis was elected controller. To succeed E. D. Toland Jr., who resigned, P. J. Dowd of St. Louis was elected treasurer in September.

Vice President Smith also was appointed chairman of a newly established Corporate Planning Group, which assists the Executive Committee in appraising appropriation forecasts, and has the important task of coordinating and consolidating long-range plans.

It is with profound regret that we report the

deaths of one of our directors and of Monsanto's first employe; the former, Dr. Ernest O. Lawrence; the latter, Dr. Louis Veillon.

Dr. Lawrence, a Monsanto Board member and Professor of Physics and Director of the University of California's Radiation Laboratory, died August 28 at Palo Alto, California. Dr. Lawrence's career was a distinguished one; the Nobel Prize in Physics was but one of his many awards. Your Board members, who had come to know him intimately and respect him, will miss his guidance and his service. We join Dr. Lawrence's countrymen in acknowledging his legacy; we share their sorrow at his passing.

Dr. Louis Veillon died, at 84, in Switzerland—the land of his birth, to which he had retired. He came to the United States in 1901 to help the late John Francis Queeny when he founded Monsanto. Dr. Veillon built the company's first plant, contributing manual labor in its construction, as well as planning its form.

When this country's small organic chemical industry was cut off by World War I from German intermediates upon which it depended, Dr. Veillon was one of the leaders in the overnight building of an integrated American chemical industry. He, like Dr. Lawrence, finds our nation in his debt.

In December, the Board elected Herbert Hoover Jr. of Los Angeles, California, to its membership. Mr. Hoover, who has served in many important posts, including that of Under-Secretary of State, brings to the company valuable knowledge and wide contacts gained by his long experience, especially in foreign affairs. He will prove most helpful in guiding our course in today's many-problemed, violent but wondrous world.

Even though this report has been winnowed of less important matters, its length is indicative of Monsanto management's endeavor to maintain a close rapport with the company's owners, its endeavor to keep them informed of all aspects of the business. The accompanying Annual Review is an effort to portray pictorially the contents of this largely technical and financial document. And so that shareowners may be informed currently of our fortunes and new products and development, the scope of quarterly reports has been enlarged recently; other supplementary information accompanies our quarterly dividends.

Monsanto Magazine, which translates our company's products and processes into topical stories and pictures, is being sent to all shareowners who have indicated they would like to receive it. If you have not done so, a note to one of us will place your name among the addressees.

We consider communications with you, the owners of Monsanto, a most important part of our responsibilities. All communications from any of you which are addressed to either of us receive personal attention and reply. We are glad to receive your suggestions or comments regarding any aspect of your business; we solicit them.

Sincerely,

*Chairman of the Board*

*President*

St. Louis, Missouri
February 11, 1959

## PARENT COMPANY, DOMESTIC AND CANADIAN SUBSIDIARIES

### SALES BY PRODUCT GROUPS

| | 1958 % | 1957 % | 1953 % |
|---|---|---|---|
| Plastics, Synthetic Resins and Surface Coatings | 28.4 | 30.2 | 32.2 |
| Phosphate Products and Detergents | 16.9 | 16.6 | 21.2 |
| Intermediates and Plasticizers | 13.7 | 13.3 | 15.5 |
| Petroleum Products—Net of purchases | 10.8 | 10.1 | — |
| Wood Preservatives and Agricultural Chemicals | 9.1 | 10.0 | 4.0 |
| Rubber and Oil Chemicals | 6.6 | 6.7 | 10.4 |
| Textile and Paper Chemicals | 6.0 | 5.2 | 2.2 |
| Pharmaceuticals, Flavors and Condiments | 4.5 | 4.1 | 5.9 |
| Heavy Chemicals | 3.3 | 3.1 | 5.4 |
| Other | .7 | .7 | 3.2 |
| | 100.0 | 100.0 | 100.0 |

## PARENT COMPANY

### SALES TO PUBLIC AND CONSUMING INDUSTRIES

| | 1958 | | 1957 | | 1956 | |
|---|---|---|---|---|---|---|
| | Position | % of Total | Position | % of Total | Position | % of Total |
| Soap and Detergent | 1 | 13.24 | 4 | 9.17 | 6 | 7.48 |
| Petroleum | 2 | 11.53 | 1 | 11.17 | 4 | 9.70 |
| Agriculture | 3 | 10.02 | 6 | 8.06 | 5 | 7.90 |
| Plastics and Resins | 4 | 9.70 | 2 | 10.56 | 2 | 10.79 |
| Rubber | 5 | 7.92 | 3 | 10.12 | 3 | 9.71 |
| Textile | 6 | 6.00 | 8 | 5.75 | 10 | 3.90 |
| Metal | 7 | 5.77 | 7 | 5.85 | 7 | 6.38 |
| Public-Service station sales, *all*, etc. | 8 | 4.98 | 5 | 8.34 | 1 | 12.40 |
| Paper and Printing | 9 | 4.80 | 11 | 3.52 | 12 | 3.59 |
| Paint, Varnish and Printing Ink | 10 | 4.66 | 10 | 4.00 | 9 | 4.08 |
| Stone, Glass and Vitreous Product | 11 | 4.65 | 9 | 5.45 | 8 | 6.09 |
| Pharmaceutical | 12 | 3.49 | 12 | 3.45 | 11 | 3.60 |
| Food | 13 | 3.04 | 13 | 3.17 | 13 | 3.56 |
| Lumber and Timber | 14 | 2.53 | 14 | 2.49 | 14 | 2.82 |
| Color and Dyestuff | 15 | 1.76 | 17 | 1.37 | 17 | 1.06 |
| Iron, Steel and Related Product | 16 | 1.38 | 15 | 1.98 | 15 | 1.49 |
| Transportation Equipment | 17 | .87 | 16 | 1.44 | 16 | 1.24 |
| Non-ferrous Metal | 18 | .73 | 18 | 1.11 | 18 | .87 |
| Other | | 2.93 | | 3.00 | | 3.34 |
| | | 100.00 | | 100.00 | | 100.00 |

## SHAREOWNERS' NET INTERESTS, WORLD-WIDE

As mentioned in previous reports, Monsanto's shareowners' true assets and true earnings include all assets and earnings of foreign subsidiaries and portions of other companies' assets and profits which are not given full effect in normal consolidations. To present such overall equities, the following pages contain consolidated financial statements and other data respecting the Company and its domestic and foreign subsidiaries, together with that portion of the assets, liabilities, sales, income, employes, additions to property and other data, which are represented by our 50 per cent ownership in associated companies.

These consolidations include our proportionate 50 per cent interests in The Chemstrand Corporation, Mobay Chemical Company, Plax Corporation, Shawinigan Resins Corporation, Monsanto Boussois (France), Mitsubishi Monsanto (Japan), and the following active subsidiaries:

Monsanto Export Company

Monsanto Overseas S.A. (Panama)

Monsanto Argentina S.A.I.C.

Monsanto Andes S.A.I.C.

Monsanto Research S.A.

Monsanto Canada Limited and subsidiary

Monsanto Mexicana S.A.

Monsanto Chemicals Limited and British subsidiaries

Monsanto Chemicals (Australia) Limited and subsidiary

Monsanto Chemicals of India Private Ltd.

Subsidiaries participating in oil and gas exploration in Canada, Bolivia, Venezuela and Sicily.

In years when such enterprises suffered losses, income taxes were reduced in the statements by the amounts they would have been reduced had our portions of the operations been integral parts of the parent company. Conversely, when such companies became profitable, no reduction was made in the income taxes shown in the consolidation because tax credit had been taken in prior years. All the companies operated profitably in 1958 with the exception of Mobay, Mitsubishi Monsanto and some oil and gas exploration subsidiaries.

All earnings of the consolidated subsidiaries and associated companies are available for dividends with the exception of Chemstrand, whose dividends are limited to the terms of its indenture and to a loan agreement, and in some foreign countries dividends are subject to exchange controls. However, assuming that our share of all such earnings had been received as dividends, we have included in each year's income taxes a provision for additional income and corporate dividend tax which we estimate would have been payable.

All dollar amounts are stated in millions except those relating to book values, per share earnings, dividends per share and capital per employe. Foreign currencies have been converted to U.S. dollars at exchange rates prevailing at each year's end, except long term debt, capital stock, and property and related reserves, which have been converted at approximate rates in effect at dates of issuance or acquisition.

## SHAREOWNER

## IN PARENT COMPANY, DOMEST

## 50% OWNED ASS

**Consolidating Only That Percentage of Associated Compa**

*(In millions)*

### ASSETS

| | 1958 | 1957 | 1956 | 1955 | 1954 | 10 YEARS AGO 1948 | 25 YEARS AGO 1933 |
|---|---|---|---|---|---|---|---|
| **Current Assets:** | | | | | | | |
| Cash | $ 37.0 | $ 36.7 | $ 32.9 | $ 59.3 | $ 43.9 | $ 15.9 | $ 2.0 |
| Marketable securities | 38.8 | 24.5 | 21.7 | 24.4 | 4.9 | 7.0 | .3 |
| Receivables, less reserves | 106.5 | 88.5 | 86.1 | 72.4 | 50.5 | 20.4 | 1.7 |
| Inventories | 117.7 | 122.6 | 113.9 | 100.0 | 75.0 | 40.2 | 3.2 |
| | $300.0 | $272.3 | $254.6 | $256.1 | $174.3 | $ 83.5 | $ 7.2 |
| **Investments, etc.** | $ 32.1 | $ 14.4 | $ 7.9 | $ 6.4 | $ 4.0 | $ 2.3 | $ 1.4 |
| **Property:** | | | | | | | |
| Land | $ 12.7 | $ 11.8 | $ 11.5 | $ 10.7 | $ 7.2 | $ 4.0 | $ 1.2 |
| Buildings | 138.2 | 128.7 | 114.5 | 98.0 | 78.3 | 37.0 | 3.3 |
| Machinery and equipment | 604.2 | 561.4 | 505.7 | 455.6 | 341.0 | 125.2 | 9.6 |
| Phosphate deposits | 6.2 | 6.1 | 5.9 | 5.6 | 5.0 | 1.4 | |
| Producing oil and gas properties | 74.9 | 67.7 | 64.6 | 59.5 | | | |
| Undeveloped oil and gas leaseholds | 12.8 | 19.7 | 15.1 | 10.4 | | | |
| | $849.0 | $795.4 | $717.3 | $639.8 | $431.5 | $167.6 | $14.1 |
| Less depreciation, depletion, etc. | 338.2 | 289.7 | 248.8 | 219.1 | 134.6 | 55.4 | 4.9 |
| Net property | $510.8 | $505.7 | $468.5 | $420.7 | $296.9 | $112.2 | $ 9.2 |
| **Deferred Charges** | $ 14.7 | $ 12.7 | $ 7.2 | $ 7.0 | $ 5.8 | $ 1.9 | $ .1 |
| | $857.6 | $805.1 | $738.2 | $690.2 | $481.0 | $199.9 | $17.9 |

See explanation, page 15.

## r INTERESTS

## D FOREIGN SUBSIDIARIES AND

## ATED COMPANIES

**n is Represented by Monsanto Shareowners' Equity**

*(In millions)*

### LIABILITIES

| | 1958 | 1957 | 1956 | 1955 | 1954 | 10 YEARS AGO 1948 | 25 YEARS AGO 1933 |
|---|---|---|---|---|---|---|---|
| **Current Liabilities:** | | | | | | | |
| Accounts payable and accruals..... | $ 66.9 | $ 64.8 | $ 59.1 | $ 51.5 | $ 37.6 | $ 16.0 | $ 1.9 |
| Income taxes less tax notes..... | 33.0 | 31.3 | 25.5 | 13.2 | | 8.8 | .5 |
| Sinking funds and notes payable... | 13.0 | 6.6 | 6.0 | 3.1 | 1.8 | .3 | |
| Employes' bonus awards..... | 2.0 | 3.3 | 3.0 | 3.1 | 2.2 | | |
| | $114.9 | $106.0 | $ 93.6 | $ 70.9 | $ 41.6 | $ 25.1 | $ 2.4 |
| **Debentures, etc.**..... | $129.9 | $133.7 | $123.9 | $130.4 | $ 95.8 | $ 30.5 | $ 1.0 |
| **Income Debentures**..... | $116.0 | $ 91.0 | $ 91.0 | $ 91.0 | $ 66.0 | | |
| **Other Liabilities:** | | | | | | | |
| Deferred income taxes..... | $ 25.7 | $ 22.7 | $ 16.2 | $ 10.2 | $ 5.0 | | |
| Pensions, etc..... | 2.0 | 2.8 | 4.2 | 4.4 | 5.2 | $ 6.9 | $ .5 |
| Employes' bonus—unawarded..... | 1.2 | 1.1 | 1.2 | .9 | .7 | | |
| | $ 28.9 | $ 26.6 | $ 21.6 | $ 15.5 | $ 10.9 | $ 6.9 | $ .5 |
| **Capital Stock and Surplus:** | | | | | | | |
| Minority interests in subsidiaries... | $ 9.2 | $ 9.9 | $ 7.9 | $ 7.5 | $ 8.6 | $ 4.5 | |
| Preference shares..... | 10.2 | 10.2 | 10.2 | 10.2 | 26.0 | 39.1 | |
| Common shares..... | 44.5 | 44.5 | 42.9 | 42.0 | 26.4 | 21.4 | $ 4.3 |
| Paid-in surplus..... | 190.2 | 188.6 | 165.9 | 151.4 | 102.6 | 32.2 | 5.4 |
| Earned surplus..... | 213.8 | 194.6 | 181.2 | 171.3 | 103.1 | 40.2 | 4.3 |
| | $467.9 | $447.8 | $408.1 | $382.4 | $266.7 | $137.4 | $14.0 |
| | $857.6 | $805.1 | $738.2 | $690.2 | $481.0 | $199.9 | $17.9 |

## SHAREOWNERS

## IN PARENT COMPANY, SUBS

**Consolidating Only That Percentage of Associated Compa**

*(In millions except per share earnings)*

| | 1958 | 1957 | 1956 | 1955 | 1954 | 10 YEARS AGO 1948 | 25 YEARS AGO 1933 |
|---|---|---|---|---|---|---|---|
| **Income:** | | | | | | | |
| Net sales | $714.4 | $708.0 | $653.8 | $630.4 | $407.6 | $181.9 | $15.5 |
| Other | 5.5 | 6.1 | 3.7 | 2.5 | 2.5 | 3.2 | .2 |
| | $719.9 | $714.1 | $657.5 | $632.9 | $410.1 | $185.1 | $15.7 |
| **Deductions:** | | | | | | | |
| Cost of goods sold | $531.3 | $515.0 | $467.7 | $434.9 | $291.6 | $130.0 | $10.9 |
| Selling, administrative, research | 90.9 | 87.4 | 88.1 | 83.0 | 62.1 | 21.6 | 1.9 |
| Provision for employes' bonus | .2 | 1.2 | 1.4 | 2.2 | .6 | | |
| Income charges | 14.6 | 14.4 | 11.5 | 11.4 | 8.2 | 2.3 | .3 |
| Minority interests | .9 | 1.0 | .9 | 1.0 | 1.0 | .7 | |
| | $637.9 | $619.0 | $569.6 | $532.5 | $363.5 | $154.6 | $13.1 |
| **Income Before Income Taxes** | $ 82.0 | $ 95.1 | $ 87.9 | $100.4 | $ 46.6 | $ 30.5 | $ 2.6 |
| **Provision for Income Taxes** | 39.1 | 46.2 | 42.1 | 50.1 | 21.4 | 11.8 | .4 |
| **Net Income** | $ 42.9 | $ 48.9 | $ 45.8 | $ 50.3 | $ 25.2 | $ 18.7 | $ 2.2 |
| **Per Common Share**[1] | $ 1.93 | $ 2.20 | $ 2.13 | $ 2.37 | $ 1.56 | $ 1.36 | $ .29 |

See explanation, page 15.

(1) Adjusted for splits.

T INTERESTS

ARIES AND ASSOCIATES

n is Represented by Monsanto Shareowners' Equity

*(In millions except where italicized)*

| | 1958 | 1957 | 1956 | 1955 | 1954 | 10 YEARS AGO 1948 | 25 YEARS AGO 1933 |
|---|---|---|---|---|---|---|---|
| Depreciation, depletion, etc..... | $ 60.6 | $ 53.3 | $ 46.8 | $ 44.7 | $ 30.8 | $ 8.0 | $ .8 |
| Book value a share[1] ..... | *$20.15* | *$19.24* | *$18.18* | *$17.37* | *$14.68* | *$7.31* | *$1.80* |
| Gross additions to property..... | $ 72.6 | $ 90.1 | $ 98.7 | $ 61.8 | $ 53.3 | $ 41.8 | $ 1.0 |
| Employes[2] ..... | *30,306* | *30,011* | *27,547* | *26,621* | *21,608* | *15,543* | *2,637* |
| Net working capital..... | $185.1 | $166.3 | $161.0 | $185.2 | $132.7 | $ 58.4 | $ 4.8 |
| Employed capital[3] ..... | $713.8 | $672.5 | $623.0 | $603.8 | $428.5 | $167.9 | $15.0 |
| Employed capital per employe..... | *$23,553* | *$22,408* | *$22,616* | *$22,681* | *$19,831* | *$10,802* | *$5,688* |
| Parent company: | | | | | | | |
| Cash dividends on common shares | $ 22.2 | $ 21.5 | $ 21.0 | $ 20.3 | $ 13.1 | $ 8.5 | $ .9 |
| Per common share[1] ..... | *$1.00* | *$1.00* | *$1.00* | *$ .92* | *$ .83* | *$ .67* | *$ .11* |
| Preference shares outstanding..... | | | | | *150,000* | *330,669* | |
| Common shares outstanding[1] .... | 22.3 | 22.2 | 21.4 | 21.0 | 15.8 | 12.8 | 7.8 |
| Number of shareowners..... | *66,427* | *60,036* | *53,018* | *43,616* | *24,222* | *15,186* | *3,696* |

(1) Adjusted for splits. (2) Excluding employes of government plants. (3) Net worth and long term debt.

# FINANCIAL REVIEW

Consolidated financial statements of the parent company and its domestic and Canadian subsidiaries alone are presented on pages 22 through 25 and should be read in conjunction with the following comments and explanations. Comparative sales and income of the companies in this consolidation were:

| | (In Thousands) 1958 | 1957 | Per Cent Increase *Decrease* |
|---|---|---|---|
| Sales: | | | |
| First quarter | $127,475 | $151,285 | *15.7* |
| Second quarter | 137,571 | 145,861 | *5.7* |
| Third quarter | 138,020 | 139,644 | *1.2* |
| Fourth quarter | 144,890 | 130,326 | 11.2 |
| | $547,956 | $567,116 | *3.4* |
| Income: | | | |
| First quarter | $ 6,066 | $ 11,534 | *47.4* |
| Second quarter | 6,933 | 10,630 | *34.8* |
| Third quarter | 7,959 | 8,810 | *9.7* |
| Fourth quarter | 13,592 | 6,442 | 111.0 |
| | $ 34,550 | $ 37,416 | *7.7* |

| | 1958 | 1957 |
|---|---|---|
| Per share earnings were: | | |
| First quarter | $ .27 | $ .52 |
| Second quarter | .31 | .48 |
| Third quarter | .36 | .39 |
| Fourth quarter | .61 | .29 |
| | $1.55 | $1.68 |
| Shares outstanding December 31 | 22,256,600 | 22,226,629 |

Equity in the unaudited 1958 net income of unconsolidated subsidiaries was approximately $3,109,000 and of 50 per cent owned companies, $9,314,000. Dividends of $3,563,738 were received from these companies in 1958 and have been included in the parent's income.

| | |
|---|---|
| Equity in the unaudited net assets of unconsolidated subsidiaries was | $30,803,000 |
| And in 50% owned companies was | 68,759,000 |
| Totaling | $99,562,000 |
| Which exceeded our carrying value of | 57,638,000 |
| By | $41,924,000 |

Charges against income for depreciation, obsolescence and depletion totaled $45,068,748, of which $42,451,789 was depreciation and obsolescence, and $2,616,959 depletion of mines and wells. In 1957, such charges were $40,334,821 and $2,329,946.

Depreciation in excess of normal provided by the sum of the years digits method of computing depreciation on recent property additions increased from $5,530,643 in 1957 to $6,533,635.

Repair and maintenance charges included in operating expenses were $37,719,105 in 1958 and $37,409,728 in 1957.

Inventories are valued substantially at the lower of cost or market. Valuation of approximately one-fifth has been determined on the last-in, first-out basis. Annual rates of inventory turnover were 4.7 in 1958 and 4.6 in 1957.

Reserves for doubtful accounts were $1,277,208 in 1958 and $1,089,563 in 1957.

The company issued in March and sold at par $25 millions of 4¼ per cent income debentures. The series matures in 50 years; a sinking fund begins in 30 years. The interest on these debentures, as well as on the $91 millions of 3¾ per cent income debentures sold in 1952 and 1955, is cumulative but payable only if earned.

The May 1, 1959 and 1960, sinking fund payments on the 2.65% debentures were anticipated by the purchase of $2 millions of these debentures.

The usual, annual $1.00 a share cash dividend was paid. The two per cent year-end stock dividend, which was paid 1955 to 1957 inclusive, was omitted this year because of reduced earnings during the earlier quarters. There are considerable differences of opinion among shareowners regarding the desirability of small, annual stock dividends. However, if the current recovery in earnings continues, the Board will institute a shareowner survey to assist it in reconsidering, next fall, the policy of paying year-end stock dividends.

Earnings in 1958 were insufficient to accumulate any funds for employe bonuses, and none was paid. However, 120 new stock options were granted in 1958, for 176,310 shares, to key employes immediately below top management level.

Monsanto has two stock option plans in effect: the Plan authorized by shareowners in 1951 for key employes and the Employes' Stock Plan, authorized by shareowners in 1956 for hourly and salaried employes, except participants of the preceding plan. The status of the authorized shares of each and the changes occurring during the year were:

| | Stock Option Plan | Employes' Stock Plan |
|---|---|---|
| Options outstanding 1/1/58 | 526,092 | 241,356 |
| Unoptioned 1/1/58 | 222,889 | — |
| Optioned during year | 176,310 | — |
| Exercised during year | 29,866 | 105 |
| Unexercised options expired | 13,762 | 62,194 |
| Options outstanding 12/31/58 | 658,774 | 179,057 |
| Unoptioned 12/31/58 | 60,341 | — |

Under the Stock Option Plan, 224 options are outstanding, at prices ranging from $27.17 to $45.06 a share, the prices having been adjusted for the 1955 three-for-one split and the 1955, 1956 and 1957 stock dividends of two per cent each. Under the Employes' Stock Plan, 400,000 shares were allotted to employes at $38.50 a share, being 95 per cent of the New York Stock Exchange average price on September 7, 1956, the date on which the plan became effective. No officers, directors or others participating in the 1951 Plan were eligible for the Employes' Stock Plan. At the year end, 5,007 options were outstanding.

# PARENT COMPANY, DOMESTI

## CONSOLIDATED FINANCIAL POSITIO

### ASSETS

| | 1958 | 1957 |
|---|---|---|
| **Current Assets:** | | |
| Cash | $ 20,264,731 | $ 24,335,109 |
| Marketable securities | 35,496,872 | 14,137,196 |
| Net receivables | 79,620,295 | 67,969,876 |
| Inventories | 84,921,615 | 94,513,502 |
| | $220,303,513 | $200,955,683 |
| **Investments and Miscellaneous Assets:** | | |
| Investment in and advances to subsidiaries | $ 13,946,354 | $ 9,663,925 |
| Investment in and advances to associates | 43,691,192 | 45,666,192 |
| Common shares held for bonus awards | 763,937 | 1,132,998 |
| Miscellaneous investments and receivables | 25,558,653 | 3,702,430 |
| | $ 83,960,136 | $ 60,165,545 |
| **Property, Plant and Equipment** | $626,844,713 | $605,000,889 |
| Less accumulated depreciation and depletion | 275,787,068 | 242,032,099 |
| Net property | $351,057,645 | $362,968,790 |
| **Deferred Charges** | $ 8,770,968 | $ 6,979,285 |
| | $664,092,262 | $631,069,303 |

The above statement should be read in conjunction with pages 20 and 21 of this report.

## D CANADIAN SUBSIDIARIES

## DECEMBER 31, 1958 AND 1957

### LIABILITIES

| | 1958 | 1957 |
|---|---|---|
| **Current Liabilities:** | | |
| Accounts payable and accruals | $ 51,117,509 | $ 49,911,494 |
| Income taxes (less $1,981,648 government securities in 1957) | 18,027,514 | 19,348,258 |
| Sinking fund payments (less $1,000,000 debentures in treasury) | 1,790,000 | 1,790,000 |
| Employes' bonus awards | 1,917,853 | 3,183,987 |
| | $ 72,852,876 | $ 74,233,739 |
| **Debentures, Bonds—Less Current Portion Above:** | | |
| 3¼% Debentures, due 1968 | $ 15,000,000 | $ 16,250,000 |
| 2.65% Debentures, due 1971 (less $1,000,000 in treasury in 1958) | 26,000,000 | 28,000,000 |
| 3⅝% Debentures, due 1972 | 12,500,000 | 13,000,000 |
| Canadian subsidiary's bonds | 540,000 | 660,000 |
| | $ 54,040,000 | $ 57,910,000 |
| **Income Debentures:** | | |
| 3¾%, due 2002 | $ 91,000,000 | $ 91,000,000 |
| 4¼%, due 2008 | 25,000,000 | |
| | $116,000,000 | $ 91,000,000 |
| **Other Liabilities:** | | |
| Deferred income taxes | $ 15,754,317 | $ 14,825,317 |
| Pensions | 1,660,854 | 2,519,582 |
| Employes' bonus—unawarded | 692,215 | 692,215 |
| | $ 18,107,386 | $ 18,037,114 |
| **Capital Stock and Surplus:** | | |
| Common shares—authorized, 25,000,000 shares, par value $2 each; reserved for stock options, 837,831 shares in 1958 and 767,448 shares in 1957; outstanding, 22,256,600 shares in 1958 and 22,226,629 shares in 1957 | $ 44,513,200 | $ 44,453,258 |
| Surplus: | | |
| Paid-in | 180,406,603 | 179,594,503 |
| Earned | 178,172,197 | 165,840,689 |
| | $403,092,000 | $389,888,450 |
| | $664,092,262 | $631,069,303 |

# CONSOLIDATED INCOME

| Income: | 1958 | 1957 | Increase Decrease |
|---|---|---|---|
| Net sales | $547,955,647 | $567,116,091 | $ *19,160,444* |
| Dividends from subsidiary and associated companies | 3,563,738 | 1,193,176 | 2,370,562 |
| Other | 4,735,332 | 6,162,122 | *1,426,790* |
| | $556,254,717 | $574,471,389 | $ *18,216,672* |
| **Deductions:** | | | |
| Cost of goods sold | $422,265,756 | $426,030,409 | $ *3,764,653* |
| Selling, administrative and research expenses | 66,962,098 | 69,888,182 | *2,926,084* |
| Provision for employes' bonus | | 943,940 | *943,940* |
| Interest expense | 6,272,363 | 5,415,570 | 856,793 |
| Other | 3,152,983 | 4,915,137 | *1,762,154* |
| | $498,653,200 | $507,193,238 | $ *8,540,038* |
| **Income Before Provision for Income Taxes** | $ 57,601,517 | $ 67,278,151 | $ *9,676,634* |
| **Provision for Income Taxes:** | | | |
| Current | $ 22,123,000 | $ 25,886,000 | $ *3,763,000* |
| Deferred | 929,000 | 3,976,000 | *3,047,000* |
| | $ 23,052,000 | $ 29,862,000 | $ *6,810,000* |
| **Net Income** | $ 34,549,517 | $ 37,416,151 | $ *2,866,634* |

The above statement should be read in conjunction with pages 20 and 21 of this report.

## D CANADIAN SUBSIDIARIES

# CONSOLIDATED SURPLUS

## PAID-IN SURPLUS

| | 1958 | 1957 |
|---|---|---|
| **Balance at Beginning of Year** | $179,594,503 | $157,328,247 |
| **Additions:** | | |
| Excess of approximate market value of common capital stock distributed as a stock dividend over the par value thereof | | 12,159,266 |
| Excess of approximate market value over the par value of common capital stock issued for a 50 per cent interest in Plax Corporation | | 9,587,500 |
| Excess of amounts received over the par value of common capital stock issued under stock option plans | 812,100 | 519,490 |
| **Balance at End of Year** | $180,406,603 | $179,594,503 |

## EARNED SURPLUS

| | | |
|---|---|---|
| **Balance at Beginning of Year** | $165,840,689 | $162,972,790 |
| **Add—Net Income for the Year** | 34,549,517 | 37,416,151 |
| | $200,390,206 | $200,388,941 |
| **Deductions:** | | |
| Dividends on common capital stock: | | |
| Cash—at the rate of $1 a share | $ 22,218,009 | $ 21,517,354 |
| Stock—2% | | 13,030,898 |
| | $ 22,218,009 | $ 34,548,252 |
| **Balance at End of Year** | $178,172,197 | $165,840,689 |

The above statement should be read in conjunction with pages 20 and 21 of this report.

# ACCOUNTANTS' CERTIFICATE

HASKINS & SELLS
CERTIFIED PUBLIC ACCOUNTANTS

BOATMEN'S BANK BUILDING
SAINT LOUIS 2

Monsanto Chemical Company:

We have examined the statement of consolidated financial position of Monsanto Chemical Company and its domestic and Canadian subsidiary companies as of December 31, 1958 and the related statements of consolidated income and surplus for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the accompanying statement of consolidated financial position and statements of consolidated income and surplus (pages 22 through 25) present fairly the financial position of Monsanto Chemical Company and its domestic and Canadian subsidiaries at December 31, 1958 and the results of their operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

January 27, 1959.

Haskins & Sells

# PARENT COMPANY,

# DOMESTIC AND CANADIAN SUBSIDIARIES

## SOURCE AND DISPOSITION OF FUNDS

*(In Thousands)*

| | TOTAL | 1958 | 1957 | 1956 | 1955 | 1954 |
|---|---|---|---|---|---|---|
| **Source of Funds:** | | | | | | |
| Net income | $176,482 | $ 34,550 | $37,416 | $38,646 | $ 42,170 | $23,700 |
| Lion Oil balance at beginning of year | 10,389 | | | | 10,389 | |
| Provisions for: | | | | | | |
| Depreciation, etc. | 184,497 | 45,069 | 42,665 | 38,449 | 35,029 | 23,285 |
| Deferred income taxes | 14,504 | 929 | 3,976 | 4,769 | 4,830 | |
| Sale of 4¼% income debentures | 25,000 | 25,000 | | | | |
| Sale of 3¾% income debentures | 25,000 | | | | 25,000 | |
| Common stock issued under options | 4,909 | 872 | 558 | 799 | 2,680 | |
| Other—net | 9,467 | 6,417 | 28 | 3,602 | 981 | *1,561* |
| | $450,248 | $112,837 | $84,643 | $86,265 | $121,079 | $45,424 |
| **Disposition of Funds:** | | | | | | |
| Dividends paid: | | | | | | |
| Preference | $ 1,178 | | | | $ 601 | $ 577 |
| Common | 98,218 | $ 22,218 | $21,517 | $20,992 | 20,343 | 13,148 |
| | $ 99,396 | $ 22,218 | $21,517 | $20,992 | $ 20,944 | $13,725 |
| Redemption of preference stock: | | | | | | |
| Parent company | 15,600 | | | | 15,600 | |
| Canadian subsidiary | 850 | | | | 850 | |
| Plant additions and replacements | 252,689 | 42,588 | 54,404 | 69,239 | 45,156 | 41,302 |
| Investment in affiliated companies | 43,620 | 23,433 | 6,316 | *553* | 7,173 | 7,251 |
| Sinking fund payments | 11,120 | 3,870 | 2,750 | 2,750 | 1,750 | |
| Increase—*decrease* in working capital[1] | 11,899 | 3,439 | *665* | 3,105 | 11,661 | *5,641* |
| | $435,174 | $ 95,548 | $84,322 | $95,533 | $103,134 | $56,637 |
| **Increase—*Decrease* in Cash and Securities** | $ 15,074 | $ 17,289 | $ 321 | *$ 9,268* | $ 17,945 | *$ 11,213* |

Italics indicate decrease.

[1] Exclusive of cash and securities.

# PETROLEUM OPERATING DATA

| | 1958 | 1957 | 1956 | 1955 | 1954 |
|---|---|---|---|---|---|
| Expenditures for Exploration..... | $11,765,858 | $15,647,840 | $20,175,034 | $13,245,034 | $11,095,306 |
| Portion Capitalized..... | $ 8,031,826 | $11,401,163 | $14,656,754 | $ 9,452,742 | $ 8,983,860 |
| Portion Expensed..... | $ 3,734,032 | $ 4,246,677 | $ 5,518,280 | $ 3,792,292 | $ 2,111,446 |
| Leaseholds Expired and Abandoned.... | $ 4,038,948 | $ 2,654,890 | $ 1,452,725 | $ 964,766 | $ 1,242,397 |
| Number of Producing Wells (net)..... | 1,157 | 1,141 | 1,098 | 1,062 | 937 |
| Natural Gas Produced—Net MCF[1]..... | 21,161,443 | 21,456,156 | 20,906,875 | 18,622,567 | 14,490,875 |
| Liquefied Pet. Gas Produced—Bbls..... | 733,306 | 884,804 | 994,517 | 744,160 | 662,875 |
| Gross Crude Oil Produced—Barrels..... | 8,050,160 | 8,568,035 | 9,322,559 | 9,415,719 | 8,333,034 |
| Net Crude Oil Produced—Barrels..... | 7,103,196 | 7,502,654 | 8,163,161 | 8,244,486 | 7,296,572 |
| Average Crude Price Per Barrel[2]..... | $2.90 | $2.98 | $2.75 | $2.74 | $2.77 |
| Domestic Undeveloped Acreage..... | 1,301,657 | 2,392,507 | 2,250,591 | 1,808,552 | 1,466,878 |
| Domestic Producing Acreage..... | 79,203 | 78,141 | 71,800 | 66,144 | 56,041 |
| Crude Oil Run to Stills—Barrels..... | 10,392,687 | 10,527,774 | 8,393,703 | 9,294,844 | 8,853,248 |
| Daily Average Crude Oil Runs—Barrels | 28,473 | 28,843 | 22,934 | 25,465 | 24,255 |
| Refinery Production—Barrels..... | 11,375,494 | 11,347,931 | 8,943,546 | 10,180,126 | 9,557,350 |
| Station Sales—Gallons..... | 114,177,697 | 111,562,216 | 116,057,474 | 109,476,394 | 104,445,456 |
| Refined Oil Sales—Gallons[3]..... | 478,416,598 | 455,120,546 | 372,239,287 | 411,997,884 | 376,151,644 |

(1) Excludes gas returned to formations.

(2) At end of year.

(3) Includes station sales.

# DIRECTORS, OFFICERS AND COMMITTEES

## BOARD OF DIRECTORS

Edgar M. Queeny, *Chairman* ..... St. Louis
Thomas H. Barton ..... El Dorado, Ark.
Charles S. Cheston ..... Philadelphia
Francis J. Curtis ..... St. Louis
Fredrick M. Eaton ..... New York
John L. Gillis ..... St. Louis
Carroll A. Hochwalt ..... St. Louis
Herbert Hoover Jr. ..... Los Angeles
Trueman M. Martin ..... El Dorado, Ark.
William W. Schneider ..... St. Louis
Charles Allen Thomas ..... St. Louis
Felix N. Williams ..... St. Louis

## EXECUTIVE COMMITTEE

Charles Allen Thomas, *Chairman*

John L. Gillis — Edgar M. Queeny
Carroll A. Hochwalt — William W. Schneider
Trueman M. Martin — Felix N. Williams

## FINANCE COMMITTEE

Charles S. Cheston, *Chairman*

Thomas H. Barton — Edgar M. Queeny
Fredrick M. Eaton — William W. Schneider
Charles Allen Thomas

### Transfer Agent

Guaranty Trust Company of New York

### Registrar

The Chase Manhattan Bank

## OFFICERS

Edgar M. Queeny ..... *Chairman, Board of Directors*
Charles Allen Thomas ..... *President*
Francis J. Curtis ..... *Vice President*
John L. Gillis ..... *Vice President*
Carroll A. Hochwalt ..... *Vice President*
Trueman M. Martin ..... *Vice President*
William W. Schneider ..... *Vice President*
Felix N. Williams ..... *Vice President*

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H. Harold Bible ..... *Vice President*
J. L. Christian ..... *Vice President*
R. K. Mueller ..... *Vice President*
Howard K. Nason ..... *Vice President*
Irving C. Smith ..... *Vice President*
Charles H. Sommer ..... *Vice President*
J. Russell Wilson ..... *Vice President*
Marshall E. Young ..... *Vice President*

---

Edwin J. Cunningham ..... *Controller*
Edwin J. Putzell Jr. ..... *Secretary*
Patrick J. Dowd ..... *Treasurer*

---

Alfred W. Long ..... *Assistant Controller*
Walter C. Thilking ..... *Assistant Controller*
Earl J. Wipfler ..... *Assistant Controller*
Charles E. Caspari Jr. ..... *Assistant Secretary*
Jeff Davis ..... *Assistant Secretary*
John N. Ehlers ..... *Assistant Secretary*
Franklin C. Rehfeld ..... *Assistant Secretary*
John F. Martin ..... *Assistant Treasurer*
J. Robert Matlock ..... *Assistant Treasurer*
Rolla H. Stocke ..... *Assistant Treasurer*

### Regional Vice Presidents

Roy L. Brandenburger — Edward W. Gamble Jr.
Victor E. Williams

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# MONSANTO ANNUAL REPORT 1959

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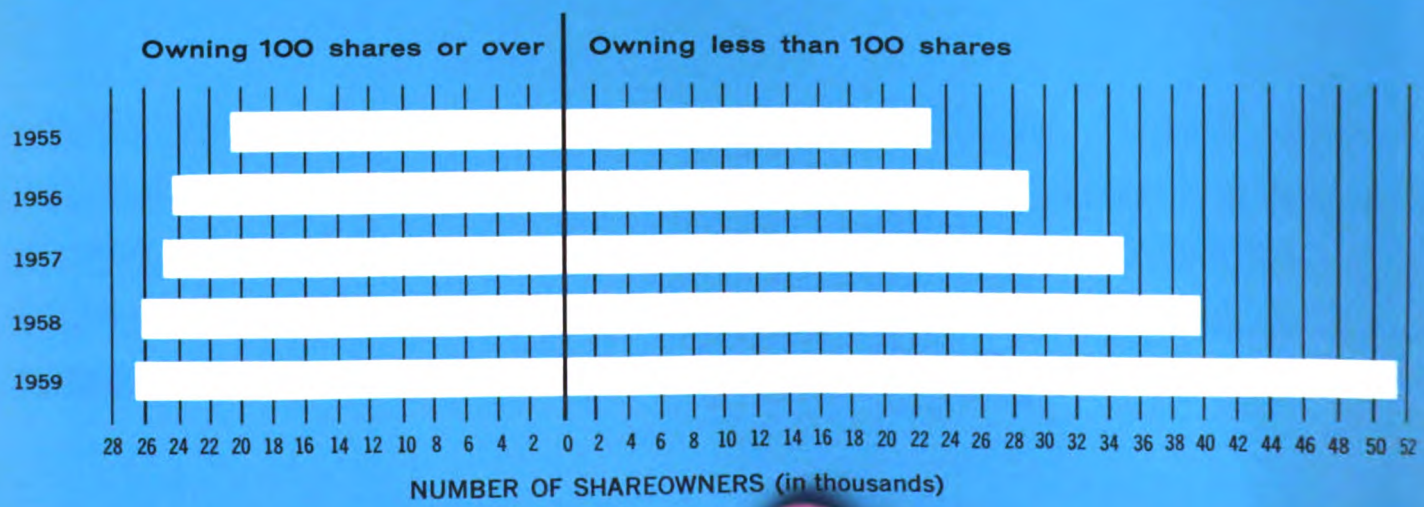
*The next Annual Meeting of the shareowners of the Company is to be held on Wednesday, March 23, 1960, at the Company's General Offices, 800 North Lindbergh Boulevard, St. Louis, Missouri. A formal notice of the meeting, together with a proxy statement and form of proxy, will be mailed to each shareowner.*

## SHAREOWNERS OF RECORD

| | 1959 | | 1958 | | 1957 | | 1956 | | 1955 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number of Shareowners | Number of Shares | Number of Shareowners | Number of Shares | Number of Shareowners | Number of Shares | Number of Shareowners | Number of Shares | Number of Shareowners | Number of Shares |
| Men | 28,830 | 4,856,599 | 24,990 | 4,752,196 | 22,877 | 4,811,506 | 20,412 | 4,788,326 | 16,702 | 4,536,291 |
| Women | 23,629 | 3,673,086 | 21,460 | 3,678,163 | 20,017 | 3,799,064 | 18,433 | 3,667,225 | 15,149 | 3,627,534 |
| Joint Accounts | 16,654 | 862,573 | 11,973 | 724,561 | 9,756 | 648,250 | 7,641 | 563,826 | 5,147 | 465,640 |
| Charitable Institutions | 255 | 169,421 | 265 | 179,961 | 288 | 206,025 | 145 | 147,082 | 154 | 133,830 |
| Educational Institutions | 106 | 92,336 | 114 | 131,892 | 139 | 145,224 | 117 | 117,618 | 105 | 126,631 |
| Estates and Trusts | 6,458 | 1,666,564 | 5,260 | 1,954,219 | 4,716 | 2,004,601 | 4,155 | 2,722,940 | 3,730 | 2,634,281 |
| Insurance Companies | 177 | 722,566 | 169 | 772,671 | 179 | 767,352 | 180 | 793,439 | 168 | 780,424 |
| Brokers and Nominees | 1,312 | 9,953,829 | 1,126 | 8,989,736 | 1,158 | 8,856,181 | 971 | 7,723,290 | 1,767 | 7,738,397 |
| All Others | 1,254 | 1,159,883 | 1,070 | 1,073,201 | 906 | 988,426 | 964 | 922,715 | 694 | 955,917 |
| Total | 78,675 | 23,156,857 | 66,427 | 22,256,600 | 60,036 | 22,226,629 | 53,018 | 21,446,461 | 43,616 | 20,998,945 |



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# TO THE SHAREOWNERS

In company with many American corporations, Monsanto experienced an encouraging first nine months and a discouraging fourth quarter in 1959. Yet, sales and earnings for the year were at an all-time high.

Monsanto consolidated sales were 13.6 per cent above those of the previous year, and earnings showed a 43.9 per cent improvement.

**Monsanto shareowners' net interests were:**

| | 1959 | 1958 | Increase |
|---|---|---|---|
| **Sales** | $811,361,741 | $714,410,345 | $96,951,396 |
| **Income after taxes** | 61,653,633 | 42,856,916 | 18,796,717 |
| **Earnings per share** | 2.66 | 1.93 | .73 |

These consolidated sales and earnings include not only those of the parent company but also those of its domestic and foreign subsidiaries, and one-half those of 50 per cent-owned associated companies. Comparative balance sheets, complete income statements and other data for Monsanto consolidated appear on pages 16 to 19, inclusive.

Principal components of Monsanto consolidated did not necessarily react uniformly.

The parent company and its domestic and Canadian subsidiaries, responding favorably to economic conditions which began improving late in 1958, established a new high in sales. Despite reductions in the selling prices of some of our major products and despite the steel strike's heavy blow which affected in some degree virtually every part of our domestic business during the fourth quarter, earnings increased likewise, largely because of the year's high production rates and manufacturing economies.

All but two of our foreign subsidiaries and associates had better sales and earnings in 1959 than in 1958. With the exception of the newly formed Fome-Cor Corporation, which is in the developmental stage, our 50 per cent-owned domestic associates also contributed sales and earnings performances better than those of 1958.

Sales of the parent company and its domestic and Canadian subsidiaries alone during 1959 were $615,377,078, an increase of 12.3 per cent over sales of $547,955,647 in 1958. Earnings of this group alone were $48,977,157, equal to $2.12 a share in 1959, compared to $34,549,517 and $1.55 a share in 1958. Our year-end stock dividend and the exercise of stock options by employes reduced per share earnings by increasing the number of shares outstanding. There were 23,156,857 such shares at the end of 1959; 22,256,600 at the end of 1958.

Included in 1959 earnings are dividends and interest of $5,390,640 received from affiliates, associates and foreign subsidiaries. In 1958, such receipts were $4,746,004.

## CAPITAL INVESTMENT

Monsanto continued to invest large sums for new and more efficient plants to make new products or provide expanded output. Such expenditures for Monsanto consolidated were $76,115,000; $72,604,000 was so expended in 1958. Important projects are described later.

Of 1959 expenditures, $58,013,000 was for the account of the parent company and its domestic and Canadian subsidiaries; $10,635,000 was expended by foreign (other than Canadian) subsidiaries; $7,467,000 represented 50 per cent of capital additions by our jointly owned associated companies.

Expenditures included $7,870,000 representing the capitalized cost of our search for oil and gas reserves. A sum of $8,394,000 was invested in or advanced to subsidiary, associated and affiliated companies. Depreciation and depletion for Monsanto consolidated amounted to $64,138,000, compared to $60,559,000 in 1958.

## SUMMARY

A high sales volume and its accompanying high throughput provided the primary thrust for improved earnings of the parent company. Manufacturing efficiencies and lower raw material prices were second and third, respectively, in importance.

These improvements more than compensated for selling-price reductions prompted by intense competition both at home and abroad. In several instances, however, we initiated lower prices to strengthen our position in major markets.

**SUBSIDIARY COMPANY:** A company in which Monsanto Chemical Company owns more than 50 per cent of the voting capital stock. A wholly owned subsidiary is a company in which Monsanto owns all of the voting capital stock.

**ASSOCIATED COMPANY:** A company in which Monsanto owns 50 per cent of the voting capital stock, the remaining 50 per cent being owned by another single interest.

**AFFILIATED COMPANY:** A company in which Monsanto owns less than 50 per cent of the voting capital stock.

**PARENT COMPANY AND DOMESTIC AND CANADIAN SUBSIDIARIES:** Includes Monsanto Chemical Company and all subsidiaries incorporated under the laws of a state within the United States or a province in Canada.

**MONSANTO CONSOLIDATED:** Includes the parent company, its domestic and foreign subsidiaries, and the 50 per cent interests in associated companies.

Anticipating future growth, we purchased additional land at Nitro, W. Va., and acquired options on two other properties in California and New Jersey. The Nitro acquisition involves about 700 acres, much of which is adjacent to our present plant. This partially developed land is the major portion of the assets obtained from Nitro Industrial Corporation, which we acquired in exchange for 27,675 shares of Monsanto common stock.

A detailed review of the year's endeavors and achievements appears in the sections which follow.

## INORGANIC CHEMICALS

### Phosphorus and Phosphates

Sales of phosphates as a group were above former levels; sodium phosphates were well ahead; calcium phosphates gained also.

Phosphorus production was up. Expansion at Monsanto, Tenn., is scheduled for early 1960 completion. Economies were realized at Monsanto, Idaho.

Additional facilities under construction included those for phosphoric acid at Long Beach, Calif.; calcium phosphate at Carondelet, Mo.; sodium acid pyrophosphate and monosodium phosphate at Trenton, Mich.

New products introduced during 1959 include improved sodium acid pyrophosphate for leavening in refrigerated doughs and doughnut doughs, light-density sodium tripolyphosphate for detergent manufacturers, and an extremely pure grade of tetrapotassium pyrophosphate benefiting liquid-detergent formulators.

### Nitrogenous Chemicals

Sales were up. Our improved non-caking ammonium nitrate fertilizer led the gain. Advanced techniques for direct application of anhydrous ammonia and nitrogen-fertilizer solutions prompted us to establish many new distributing depots.

Urea from the new El Dorado, Ark., plant is now an intermediate for other Monsanto chemicals and a fertilizer for rice and vegetable crops of Arkansas, Arizona and New Mexico.

Expanded ammonia facilities went on stream in October at Luling, La., where ammonia now is being produced in the nation's first completely computer-controlled, closed-loop chemical plant. Computer control has increased efficiency and throughput.

A high nitrogen-content solution, *Tri-Una-Sol* liquid fertilizer, containing urea and ammonium nitrate, was developed to accommodate growing demands for this type of product.

### Other Products

The year marked our first major step toward becoming a supplier of a semiconductor material—ultra-pure silicon—for use in electronic transistors and rectifiers. A plant to produce silicon, a material which contains impurities of less than one part in six billion, neared completion at year end at a new site in St. Charles County, Mo.

Surfactant sales as a group were above those of 1958. Gains were strong in alkyl benzenes and *ACL* bleaching agents. Monsanto, Ill., facilities for the former are being enlarged and modified to produce improved forms of this important detergent intermediate.

At Everett, Mass., expanded facilities for *ACL* were completed. *ACL* products are chlorine carriers for dry bleach, sanitizer and scouring-powder formulations.

Sales of acids and heavy chemicals gained; demand for alum and sulfuric acid was heavy. Silica products sales increased. At Everett, expanded facilities permitting integrated production of *Syton* silica sols and *Santocel* silica aerogels began operating in April. *Santocel* FR-C, a new silica aerogel, improves flatting for surface coatings. Two new silica aquasols, *Syton* AS-200 and *Syton* W-200,

were introduced for the synthetic-fiber industry and for "non-slip" floor waxes.

## ORGANIC CHEMICALS

Production and sales of organic chemicals reached record levels, despite lengthy strikes in some consuming industries.

Some products were allocated during the last quarter, due to raw materials shortages induced by the steel strike. Competitive pressures, including those from low-priced imports, forced several product prices lower.

Research and development efforts yielded significant process improvements.

### Agricultural Chemicals

Sales of agricultural chemicals substantially exceeded those of 1958, paced by greatly expanded use of methyl parathion to control boll weevils in cotton.

Successful Canadian field tests of our new *Avadex* herbicide led to its registration by the Canadian government for sale in Canada in 1960. *Avadex* is the first commercially practical means of chemically controlling wild oats—ranking enemy weed of Canadian farmers—in flax, sugar beets and small grains.

*Santoquin*, an antioxidant to preserve the nutritive value of feeds and dehydrated forage, became the first product cleared for sale under new food-additive legislation. Although first-year sales were hampered by a subsequent blanket restriction on new feed additives, *Santoquin* was exempted from this restriction late in the year.

Substantial price cuts were made to broaden the markets for *Vegadex* and *Randox*, herbicides which combat annual grassy weeds in horticultural and field crops.

Our agricultural chemicals marketing staff was strengthened.

### Functional Fluids and Petroleum Additives

Sales of petroleum chemicals gained. Additives for motor and gear oils moved especially well. Our St. Louis engine-testing laboratory was doubled to accommodate expanded research.

A uniquely heat-stable and radiation-resistant synthetic lubricant, based on polyphenyl ethers and invented by our Research & Engineering Division under Air Force contract, was under final test at year's end, both by the Air Force and engine makers, for ultrasonic aircraft.

A new gasoline additive which inhibits formation of ice and dirt deposits in automobile carburetors was introduced.

### Intermediates

Sales of intermediates—industrial chemicals which are starting materials for a wide spectrum of chemical end products—achieved all-time highs.

Extensive modernization of phenol facilities at Monsanto, Ill., was begun. Phenol production at Avon, Calif., was near capacity.

Major additions to production capacity for nitrochlorobenzene and hydrogenated products were completed.

### Paper Chemicals and Wood Preservatives

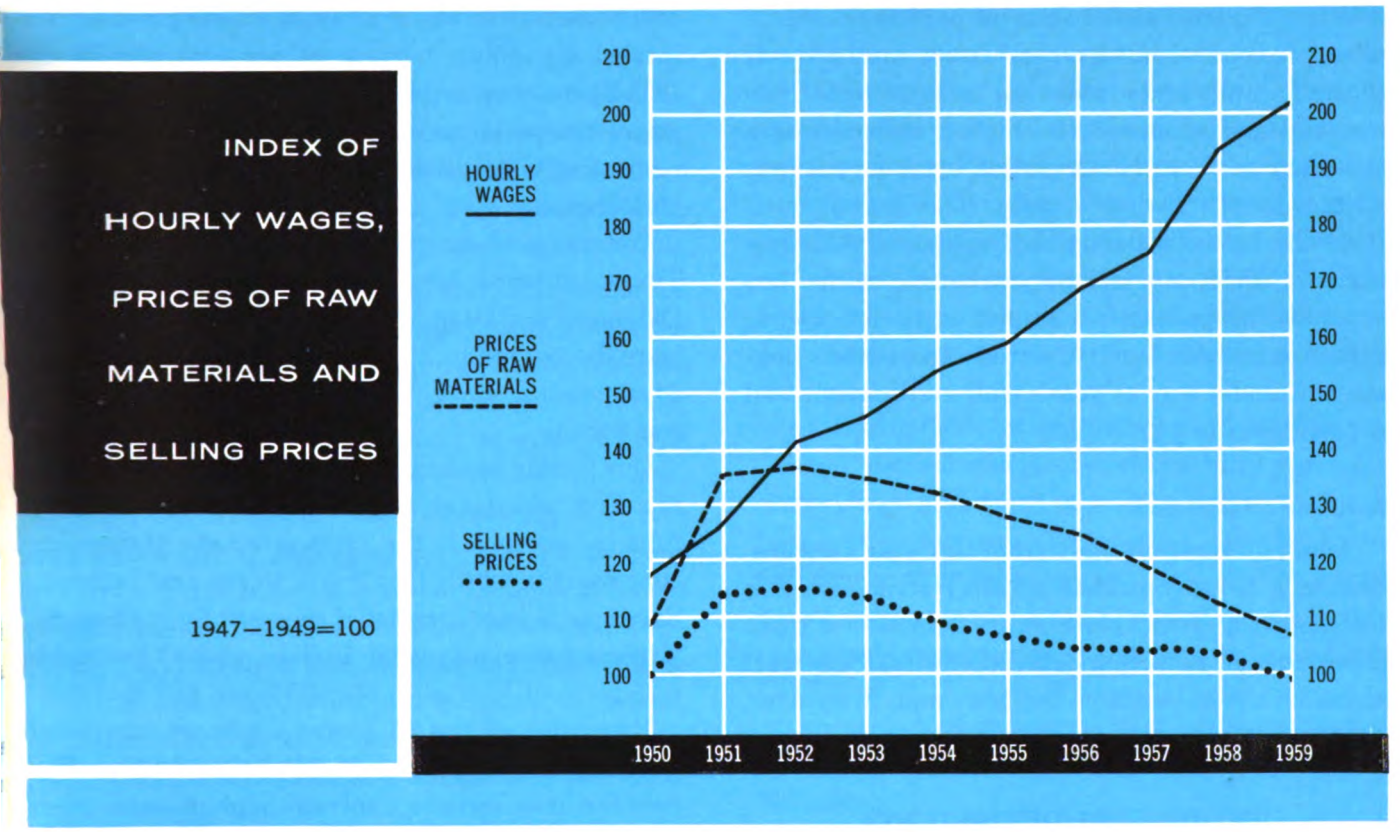
New facilities for *Mersize*, a chemically fortified rosin size for paper, began operating at Nitro, W. Va., and at Seattle.

Unusually brisk demand for pentachlorophenol wood preservative helped this product group's sales gain.

Nitro's tall oil fractionating unit, a joint enterprise with Emery Industries, Inc., bettered its design capacity level in less than one year of operation.

### Pharmaceuticals, Flavors and Condiments

Sales, although above 1958 levels, were less




responsive both to 1958's decline and 1959's resurgence of business activity.

The Seattle production unit for vanillin, one of our oldest products, was expanded again.

Lowered tariffs permitted heavy Japanese imports which forced an unwarranted reduction in our price of saccharin, Monsanto's oldest product.

### Plasticizers

Unprecedented demand for these compounds—used primarily to give flexibility to vinyl film, sheeting, floor tile, wire coating and moldings—resulted in record sales. This despite the fact that phthalate ester types were allocated late in the year due to the unavailability of naphthalene from the struck steel industry's coke ovens. Four new plasticizers for polyvinyl chloride resins were introduced for upholstery-covering materials.

Everett, Mass., phthalate esters facilities were expanded for the third time in four years.

*Santicizer* 409, Monsanto's first polymeric plasticizer, achieved full commercial status and acceptance for vinyl plastics requiring "permanent" flexibility.

*Aroclor* 5460 was found to be an effective, low-cost fire retardant for polyethylene.

### Resin Materials

Increased use of polyester resins (for pleasure-boat hulls and structural panels) and alkyd-resin surface coatings spurred our sales to record levels.

When the steel strike shut off naphthalene supplies, we converted our St. Louis and Everett phthalic anhydride units to ortho-xylene raw material and absorbed the higher unit cost as a customer service. Nevertheless, our output was curtailed.

At St. Louis, capacity for bisphenol A, a raw material for epoxy and polycarbonate resins, was expanded 50 per cent; a similar expansion of our maleic anhydride facility, already the world's largest, was under way at year's end; and fumaric acid capacity was being doubled.

### Rubber Chemicals

Sales recovered strongly from last year's decline, despite a lengthy rubber-industry strike early in the year. The year's close found demand for these chemicals off, reflecting delayed effects of the steel strike on the automotive industry and, in turn, on the rubber industry.

## PETROLEUM OPERATIONS

While Lion Oil sales did not exceed those for 1958, the division's contribution to Monsanto's earnings increased materially.

At the modernized and expanded El Dorado, Ark., refinery manufacturing efficiencies were effected. Increased returns resulted principally from heavier sales of crude from Lion's Venezuelan concession and from accelerated production of oil and gas from domestic discoveries.

Unfavorable conditions of oversupply continued in the petroleum industry, resulting in depressed prices and restrictions on the amounts of oil permitted to be taken from domestic wells.

Our search for reserves continued. Lion participated in the completion of 64 producing wells in 1959. Our interest is 32.6 net wells. Exploration expenditures for 1959 were $11.4 millions, $0.4 million less than those of 1958. Crude production totaled 8.9 million barrels, 25 per cent above the 1958 figure. Production of natural gas and liquefied petroleum gas increased six per cent and 28 per cent, respectively. Again additions to reserves exceeded withdrawals.

We made oil or gas discoveries in Mississippi, Texas, Louisiana, North Dakota, Colorado, Arizona, Oklahoma and Utah. Additional oil-producing sands were discovered in Simpson County, Miss., and in Matagorda County, Tex., where another gas field was found.

Our foreign explorations continued to be rewarding. Five additional wells were completed successfully in Venezuela in the 2,000-acre Lake Maracaibo concession in which Lion has a 15 per cent interest. Seven wells were completed successfully in Canada. Explorations continued in Bolivia, where Lion holds a 25 per cent interest in 660,000 acres, and in Spain.

Expansion of the El Dorado refinery increased capacity from 29,000 to 33,000 barrels daily. The new facilities include a solvent asphalt-extraction unit, which boosted yields of paving-grade asphalt, and a desulfurization unit to improve further the quality of diesel fuels and heating oils. In accordance with our program of funneling Lion's products toward Monsanto chemicals, a propylene tetramer unit went on stream in October. First shipments of propylene tetramer, used in the manufacture of detergents, were made in November to our Inorganic Chemicals Division.

Lion extended its service stations—previously restricted to the Midsouth—to the Midwest and Gulf Coast areas.

## PLASTICS

The plastics industry, growth of which had been retarded by the 1958 recession, regained its characteristic vigor. Industry production soared to about

5.9 billion pounds, topping the previous year's total by 27 per cent.

Monsanto benefited from increased sales as markets broadened. Beyond that, however, a number of recently introduced specialties penetrated new markets. Some sales gains were attributable to increasing use of plastics as engineering materials.

*Saflex* vinyl butyral—interlayer for laminated safety glass—sales of which dipped during automotive production slowdowns brought on by the steel strike, improved for the 12-month period. Major gainers, however, were *Lustrex* styrene, *Opalon* vinyl chloride, *Resinox* phenolic resins and *Resimene* melamine resins. *Lustrex* applications include appliance parts, packages, toys and phonograph records; *Opalon* resins and compounds are used widely in wire insulation, flooring, phonograph records, film and sheeting; *Resinox* and *Resimene* go into melamine decorative and industrial laminates, adhesives, and automotive and appliance finishes. Together these represent a substantial portion of our plastics activities.

Several new materials marketed commercially for the first time include a new textile resin which bolsters the wash-and-wear properties of cotton garments; a series of water-soluble ethylene-maleic anhydride copolymers which show promise as thickening agents, dispersants, oil-recovery additives and as building blocks for chemical synthesis; a new vinyl compound for cable jacketing.

Monsanto's new silane-modified phenolic, capable of withstanding the high temperatures to which certain missile components are subjected, formed a new link between our company and the space age. A fast-setting phenolic adhesive began helping the plywood industry upgrade its products for interior and sheathing use. Our new styrene copolymer was adopted in the manufacture of some self-polishing floor waxes.

Modifications at our Texas City, Tex., plant resulted in a more versatile and lower cost process for manufacturing polyethylene and will bring its annual capacity to 100 million pounds. Styrene monomer, acrylonitrile and acetylene capacities were boosted. Styrene monomer enters into the manufacture of styrene plastics and synthetic rubber; acrylonitrile is a raw material for synthetic fibers; acetylene is a chemical intermediate which Monsanto uses to make acrylonitrile and vinyl chloride.

At Springfield, Mass., output of high-impact *Lustrex* styrene was increased one-third and a laboratory was established to develop better machinery for plastics processing. To meet demands for *Lytron* 680 acrylic-type latex binder—now used in a number of water-based paints for outdoor application over wood—our capacity was trebled at Santa Clara, Calif., and doubled at Addyston, Ohio.

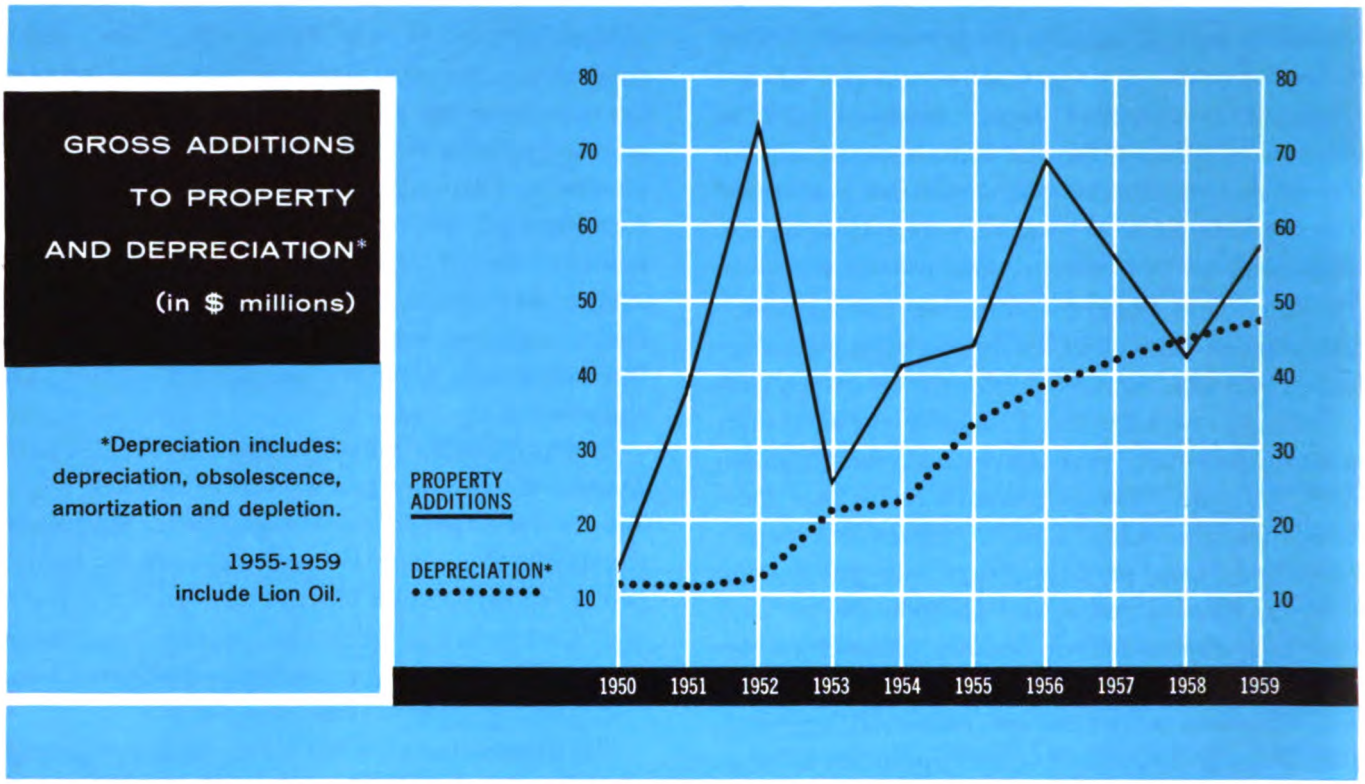
Our plans to install 200 million additional pounds of styrene monomer capacity were announced in November.

Operation of our facilities at record levels, improvement of several processes, greater use of new bulk-shipping methods, and increased utilization of computers and other forms of automation helped us overcome the penalties of generally lower prices.

## RESEARCH

Our research efforts continued to grow in volume and importance. In 1959, the company was granted 271 U. S. patents and 229 foreign patents. Innovations represented by these patents form a broad technological base for future development.

In 1958, following an eight-year period in which 403 Monsanto products were introduced, 310 of those products contributed almost 26 per cent of total sales for our three chemical divisions and almost 23 per cent of gross profits. In addition, 56




new Monsanto products survived screening tests in 1959 and were sold in commercial volumes.

Additional products were in introductory phases as the year ended. Samples of Monsanto's new micro-fine metal oxides, trademarked *Micria*, were offered to customers for evaluation. So small that a row of 2.5 million of them would measure only one inch, *Micria* particles are expected to find markets in the ceramics, cosmetics, plastics, rubber, paint and metals industries.

We invested about $26.9 millions in research, development, patent work and basic engineering for our own account in 1959, compared to $23.4 millions in 1958. In addition, a substantial number of research projects were under way for government account.

About 65 per cent of the 1959 expenditure was used to bring new products to market and to add to the company's store of basic new information on which future products will be based. The remainder was invested in improving existing products.

At Mound Laboratory, which we operate at Miamisburg, Ohio, for the Atomic Energy Commission, new facilities were built to meet increased demand for neutron sources and other items produced there. New unclassified projects include production of alpha sources, isolation of naturally occurring isotopes in research quantities, and research on plutonium-alloy fuel systems for fast-neutron reactors.

In the third quarter, we broke ground at our Creve Coeur site in suburban St. Louis for our new Research Center, which will make possible consolidation of certain research functions when the first building is completed in 1961.

Bringing together many of our research facilities now housed at widely separated locations will result in economies and increased efficiency. Located be-

*tween* the present Inorganic Chemicals Research Laboratory and the Agricultural Chemicals Laboratory, the new center is being built to accommodate extensive expansion.

## FOREIGN OPERATIONS

Sales and earnings of major foreign affiliates were greater than those of 1958, reflecting improved economic conditions abroad, coupled with aggressive selling and expanded and improved manufacturing operations.

Our exports were greater also, despite an increasingly competitive world market. Impact of the six-nation European Common Market, which began functioning in 1959, already is being felt. It is anticipated this impact will be intensified further as the Common Market member nations continue tariff reductions among themselves and adopt common tariffs to nations outside. Increasing self-sufficiency of many smaller nations resulted in reduced demands for some of our chemicals, but demand for our specialties increased.

Our manufacturing interests within the Common Market and elsewhere enhance our stability in global markets. Our policy is to export as long as practical and to shift to our own local foreign manufacture when necessary to retain markets or gain sales advantages. This we have done in numerous instances, dating to our first overseas investment in 1920. And the same policy influenced our December decision to build a multi-million dollar plant in Europe to produce *Saflex* polyvinyl butyral sheeting for laminated safety glass. The location will be announced soon. This plant, expected to be producing by late 1960 or early 1961, represents an effort to secure our *Saflex* position within the Common Market.

Our earliest overseas manufacturing subsidiary, Monsanto Chemicals Limited, which manufactures a wide range of chemicals and plastics in the United Kingdom, began operating a new polyethylene plant at Fawley, England, near Southampton. This new facility augments operations at Newport, on the Bristol Channel, and at Ruabon, North Wales. The company's sales increased over those of 1958 and earnings likewise moved upward.

Sicedison, S.p.A., in which we hold a 40 per cent equity, is one of Italy's largest chemical companies. In its plants at Mantova in the Po Valley and at Porto Marghera near Venice, Sicedison manufactures organic, inorganic, plastics and petrochemical products. This company continued its rapid growth in 1959, with completion of new facilities for manufacture of hydrogen cyanide and fluorine derivatives, and expansions of acrylonitrile, polystyrene and polyvinyl chloride facilities. A 40,000-square-foot, up-to-date research laboratory and a pilot plant near Milan were completed. Sales increased substantially over those of 1958.

Our jointly owned French company — Societe Monsanto Boussois — reported decreases in sales and earnings, due to a first-half dip in French industrial activity. Marked improvement was noted in the second half, however. Expansion of its high-impact polystyrene unit was completed, enabling the company to maintain its position as leader in France's polystyrene market.

Monsanto Canada Limited, a wholly owned subsidiary serving the Canadian market with a broad line of products including plastics, adhesives, fine chemicals, paper chemicals and petroleum additives, increased sales and earnings over those of 1958. Late in the year, this company began construction of Canada's first maleic anhydride plant at Montreal to serve Canadian manufacturers of surface coatings, paper sizes and polyester resins.

In Japan, 50 per cent-owned Mitsubishi Monsanto Chemical Company enjoyed substantially increased sales and earnings, reflecting the remarkable re-

covery of the Japanese economy from its 1958 recession. Major expansions for this plastics producer are currently under way.

Monsanto Chemicals (Australia) Limited, in which we have a 77 per cent direct and indirect interest, set new sales and income records. A styrene monomer plant is being built in Sydney by Australian Petrochemicals Pty. Limited, a new 55 per cent-owned subsidiary for the manufacture of petrochemicals. This company is a joint venture with Petroleum and Chemical Corporation (Australia) Limited.

Monsanto Mexicana, S.A., a wholly owned subsidiary, experienced lower earnings, due to a severe drop in demand for agricultural chemicals and increased competitive activity in several product lines. New plants began producing phosphoric acid and sodium tripolyphosphate, the latter being a key raw material for the local detergent industry.

Our wholly owned subsidiary in Argentina, Monsanto Argentina, S.A.I.C., added units for manufacture of vinyl compounds, phthalic anhydride and plasticizers. Resins for the vinyl compounds will come from a newly formed Monsanto subsidiary – Monsanto Andes, S.A.I.C. – which has a plant nearing completion at Mendoza, Argentina. Sales and earnings of Monsanto Argentina were higher than those of 1958.

Gross assets of foreign companies in which Monsanto holds, directly or indirectly, 40 per cent or more of the equities, approximate $300 millions. A substantial part of these assets—more than 75 per cent—is in Great Britain and Western Europe.

## 50 PER CENT-OWNED DOMESTIC ASSOCIATED COMPANIES

All established domestic associates exceeded their 1958 sales and earnings. Fome-Cor Corporation, which was formed in February as our fifth associate, did not participate in profits, as it is still in the developmental stage.

**The Chemstrand Corporation** marked its tenth anniversary in 1959 by achieving sales, earnings and production figures better than those for 1958. Chemstrand, owned jointly with American Viscose Corporation, is the world's second largest producer of chemical textile fibers.

We again are enclosing copies of Chemstrand's Annual Report in our shareowner mailings. The Chemstrand report discloses that, despite reductions in the price of nylon tire yarns, consolidated net income increased 31 per cent over that of 1958. Consolidated sales for 1959 were $197,321,000, compared to $172,968,000 in 1958. Earnings on such sales were $24,078,000, compared to $18,355,000 in 1958.

In December, Chemstrand paid a dividend of $5,000,000 divided between its two owners. Monsanto received $2,500,000, the net of which, after providing for intercorporate dividend tax, was $2,305,000. The company also retired $5,000,000 of subordinated notes held equally by us and Viscose.

Within the year, Chemstrand announced plans to build a new nylon plant at Greenwood, S. C., and a research laboratory in what is known as the Research Triangle (formed by Raleigh, Durham and Chapel Hill) of North Carolina. In February, a new "Acrilan" acrylic fiber plant in Coleraine, North Ireland, was dedicated by Chemstrand's wholly owned British subsidiary, Chemstrand Limited. Acrylic fiber also is being produced by Chemstrand affiliates in Japan and Italy.

In the fourth quarter, the company entered the carpet-nylon field with a new yarn trademarked "Cumoloft".

**Mobay Chemical Company,** owned jointly with Farbenfabriken Bayer A.G. of West Germany, con-

tinued to make significant gains in sales and earnings.

At year end, a 50 per cent expansion of plant capacity was nearing completion for tolylene diisocyanate, used in urethane foams, elastomers and protective coatings. A third major expansion will be completed by mid-1960. The new facilities will raise annual capacity from 18 million pounds to more than 25 million pounds.

A new plant for making polycarbonate plastics, to be marketed under the trademark "Merlon", also is scheduled for start-up early in 1960.

A new 26,000-square-foot headquarters-office building, now being constructed for Mobay in Pittsburgh, will utilize a variety of urethane materials—one application being steel-faced exterior, curtain-wall panels which have a rigid urethane-foam core for insulation and structural support.

Technical advances in urethane chemicals for elastomers, marketed under Mobay's trademark "Multraphane", helped expand uses for these tough, cast materials in the automotive and aircraft industries.

Some major refrigerator and freezer manufacturers are introducing units with urethane-foam insulated walls which permit design of thinner wall sections, increasing interior space up to 50 per cent with no increase in outer dimensions.

Cushioning components for military rockets, missiles and guidance systems—including the new Astronaut space capsule—provided other new uses for urethane foams.

**Shawinigan Resins Corporation's** sales were up significantly over those of 1958. Vinyl butyral resin, its largest volume product, is used by Monsanto for laminated safety-glass interlayer. Such sales increased for the year despite the effect of the steel strike on the automotive industry.

When sales of "Gelvatol" polyvinyl alcohol taxed capacity, plans to double production were moved ahead. "Gelvatol" has made headway in the adhesives, textile, packaging and paper industries.

Special grades of "Butvar" vinyl butyral resin gained additional acceptance in the manufacture of corrosion-resistant metal primers and structural adhesives, particularly those used for metal-to-metal bonding. "Formvar" polyvinyl formal resin continued to hold its outlets in wire insulation.

Shawinigan is owned jointly with Shawinigan Chemicals Limited, a Canadian company.

**Plax Corporation's** sales and earnings were up sharply over those of 1958, due primarily to the winning of a big new market for high-density polyethylene containers for liquid detergents. Also, a new, square, one-gallon plastic container, made at high speed on new machinery designed by Plax, is selling successfully in competition with conventional containers.

Light-gauge styrene film, trademarked "Polyflex", is entering the overwrap market and is being used in the "see-through" merchandising of such diverse items as lettuce, meats, cigars and stationery. The window in the envelope which contained this report is made of "Polyflex".

A 40,000-square-foot addition to the Deep River, Conn., plant was virtually complete at year's end. Additional high-speed bottle-making machines were installed at the Ligonier, Ind., plant, where capacity ultimately will be doubled.

An 18-acre site was purchased at Anaheim, Calif., where Plax plans construction of a plastic-bottle plant to serve the West Coast.

Plax is owned jointly with Emhart Manufacturing Company.

**Fome-Cor Corporation,** formed in February, is a joint venture with St. Regis Paper Company. Its

product, "Fomecor", is a sandwich of styrene foam between layers of paper. The lightweight board has exceptional cushioning and insulating properties. Full-scale production began at Addyston, Ohio, in July. We believe "Fomecor" board will have many applications. It is being used now to package shipments of wet and frozen products, such as flowers, vegetables, fruit and poultry. The automotive industry is testing "Fomecor" in the fabrication of interior trim for cars. There appear to be possibilities for its use in display panels and outdoor shelters.

## PERSONNEL

In a year when labor-management strife was national, our relations with our employes were good. Eleven of the 18 labor contracts in the United States and Canada expired or were opened for renegotiation; 10 were concluded equitably and amicably and most were signed for two or more years. Only at Mound Laboratory, which Monsanto operates for the Atomic Energy Commission at Miamisburg, Ohio, was there any difficulty: production and maintenance employes struck for three weeks, primarily over involvements in contractual language. The strike ended when a three-year contract was signed. Despite the walkout, production schedules were met.

As computer-controlled plants neared reality, more attention than ever focused on the new skills and knowledge being required at all levels of the organization. The chemical industry long has been built around highly instrumented plants. Nevertheless, it is necessary to train employes continually in special skills required by the new technologies.

In addition, our divisions have stepped up management training programs; new educational courses have been established for sales personnel and for technical service managers. These supplement previously established educational-leave and tuition-payment programs.

Because of our deep involvement in science, we long have sought better means of recognizing creativity in research and engineering. In recognition of outstanding ability in these fields, we have created the positions of Senior Scientist, Senior Technologist, Scientist and Technologist. Such men—now 40 in number—have been freed of all administrative duties in order that they may pursue exclusively and independently their search for useful knowledge.

In September, 2,968 salaried employes and 1,663 hourly employes received 150,182 shares of Monsanto common stock at the conclusion of the 1956 Employes' Stock Plan. All eligible employes had been offered an option on as much stock as each could pay for with monthly deductions not to exceed 10 per cent of salary or wages, for a period of three years. The option price was $38.50—95 per cent of the closing market price the day the plan went into effect. An additional 19,783 shares were acquired by employes at earlier option-exercise dates.

In June, the Board of Directors elected Charles H. Sommer to the post of executive vice president, to the board and to the Executive Committee. Mr. Sommer has spent his entire business career with Monsanto and had been both a vice president and general manager of the Organic Chemicals Division. To succeed Mr. Sommer, Robert M. Morris, who had been assistant general manager, was elected a vice president and appointed general manager of the division. Herbert Hoover Jr., who joined our board in 1958, was elected to the Finance Committee.

At the 1959 Annual Meeting of Shareowners, for reasons of health and age, two of our directors did not stand for re-election: Thomas H. Barton and Francis J. Curtis. A third director, Charles S. Cheston, retired at the end of the year upon reaching Monsanto's retirement age.

Mr. Barton had been identified with the former Lion Oil Company since its inception and had served it as president and board chairman. After the

Monsanto-Lion merger, he was an active member of our board and Finance Committee. Mr. Curtis, who had been a vice president since 1943 and a board member since 1949, spent his entire career with Monsanto or the predecessor Merrimac Chemical Company, serving in research, development and personnel activities. Mr. Cheston was elected to our board in 1945 and had served as chairman of the Finance Committee since 1947. In recent years, he also had been a member of our Bonus, Stock Option and Auditing Committees.

All three of these men made many significant contributions to the company, and their pleasing personalities and constant association will be missed by their former associates, especially by the undersigned. However, their advice and counsel remain available to us.

In November, the board elected Alan H. Temple to its membership. Mr. Temple, who presently serves The First National City Bank of New York as vice chairman of its board and is one of its directors, has had a distinguished career. His counsel, especially in financial matters, will be helpful in formulating policies.

Recognizing the increasing need for employe education in governmental and political matters, the company created the Office of Civic Affairs to implement company-wide programs of employe information and participation. We have established Business Climate Committees at locations in 17 states where we have major operations and we are undertaking programs aimed at making available to our employes information on national and local issues which affect Monsanto. Objective: to solicit their interest and understanding and, wherever possible, their help. Thomas J. Diviney, who had been assistant director of the Personnel Relations Department, was appointed director of civic affairs.

In 1959, Monsanto established the second best safety record in its history, with an accident frequency rate of .73 accidents per million man-hours worked, one-fifth the latest chemical industry average of 3.56 and one-eighth the all-industry average. In fact, our employes were nine times safer on the job than away from it.

Monsanto consolidated now employs 31,346; the parent company, 19,317. We should be negligent if we did not acknowledge in this report to shareowners the great loyalty, ability and, in many cases, ingenuity of our people. Spearheading their efforts are members of our management team, about whom we receive frequent expressions of interest from shareowners, financial analysts and others. Although these men are introduced at our Annual Meetings, this year we introduce them to our entire shareowner family—which, by the way, had grown to 78,675 at year's end.

Starting on page 29, we have included photographs and brief biographical sketches of our management. These men and their subordinates guide our company with vitality into the sixties and, we hope, with resultant progress.

Sincerely,

*Chairman of the Board*

*President*

St. Louis, Missouri
February 12, 1960

## PARENT COMPANY, DOMESTIC AND CANADIAN SUBSIDIARIES

### SALES BY PRODUCT GROUPS

| | 1959 % | 1958 % | 1954 % |
|---|---|---|---|
| Plastics, Synthetic Resins and Surface Coatings | 29.2 | 28.4 | 29.9 |
| Phosphate Products and Detergents | 17.2 | 16.9 | 25.3 |
| Intermediates and Plasticizers | 14.4 | 13.7 | 15.9 |
| Petroleum Products—Net of purchases | 9.3 | 10.8 | — |
| Agricultural Chemicals and Wood Preservatives | 9.2 | 9.1 | 4.2 |
| Rubber and Oil Chemicals | 6.6 | 6.6 | 9.1 |
| Textile and Paper Chemicals | 6.1 | 6.0 | 2.6 |
| Pharmaceuticals, Flavors and Condiments | 4.2 | 4.5 | 5.8 |
| Heavy Chemicals | 3.3 | 3.3 | 5.5 |
| Other | .5 | .7 | 1.7 |
| | 100.0 | 100.0 | 100.0 |

## PARENT COMPANY

### SALES TO PUBLIC AND CONSUMING INDUSTRIES

| | 1959 | | 1958 | | 1957 | |
|---|---|---|---|---|---|---|
| | Position | % of Total | Position | % of Total | Position | % of Total |
| Soap and Detergent | 1 | 12.75 | 1 | 13.24 | 4 | 9.17 |
| Agriculture | 2 | 11.46 | 3 | 10.02 | 6 | 8.06 |
| Plastics and Resins | 3 | 10.03 | 4 | 9.70 | 2 | 10.56 |
| Petroleum | 4 | 9.88 | 2 | 11.53 | 1 | 11.17 |
| Rubber | 5 | 8.94 | 5 | 7.92 | 3 | 10.12 |
| Textile | 6 | 6.54 | 6 | 6.00 | 8 | 5.75 |
| Metal | 7 | 6.07 | 7 | 5.77 | 7 | 5.85 |
| Stone, Glass and Vitreous Product | 8 | 6.00 | 11 | 4.65 | 9 | 5.45 |
| Paper and Printing | 9 | 4.96 | 9 | 4.80 | 11 | 3.52 |
| Public-Service station sales, etc. | 10 | 4.35 | 8 | 4.98 | 5 | 8.34 |
| Paint, Varnish and Printing Ink | 11 | 4.01 | 10 | 4.66 | 10 | 4.00 |
| Pharmaceutical | 12 | 2.72 | 12 | 3.49 | 12 | 3.45 |
| Food | 13 | 2.50 | 13 | 3.04 | 13 | 3.17 |
| Lumber and Timber | 14 | 2.31 | 14 | 2.53 | 14 | 2.49 |
| Color and Dyestuff | 15 | 1.58 | 15 | 1.76 | 17 | 1.37 |
| Transportation Equipment | 16 | 1.32 | 17 | .87 | 16 | 1.44 |
| Iron, Steel and Related Product | 17 | 1.28 | 16 | 1.38 | 15 | 1.98 |
| Non-ferrous Metal | 18 | .56 | 18 | .73 | 18 | 1.11 |
| Other | | 2.74 | | 2.93 | | 3.00 |
| | | 100.00 | | 100.00 | | 100.00 |

## MONSANTO CONSOLIDATED

As mentioned in previous reports, the statements of financial position and income, for the parent company and its domestic and Canadian subsidiaries, do not reflect the total interests of Monsanto shareowners. To present such over-all equities, the following pages contain consolidated financial statements and other data respecting the company and its domestic and foreign subsidiaries, together with that portion of the assets, liabilities, sales, income, employes, additions to property and other data which are represented by our 50 per cent ownership in associated companies.

These consolidations include our proportionate 50 per cent interests in The Chemstrand Corporation, Fome-Cor Corporation, Mobay Chemical Company, Plax Corporation, Shawinigan Resins Corporation, Monsanto Boussois (France), Mitsubishi Monsanto (Japan), and the following active subsidiaries:

Monsanto Export Company

Monsanto Overseas, S.A. (Panama)

Monsanto Argentina, S.A.I.C.

Monsanto Andes, S.A.I.C.

Monsanto Research, S.A.

Monsanto Canada Limited and subsidiary

Monsanto Mexicana, S.A.

Monsanto Chemicals Limited and British subsidiaries

Monsanto Chemicals (Australia) Limited and subsidiary

Monsanto Chemicals of India Private Ltd.

Subsidiaries participating in oil and gas exploration in Canada, Bolivia, Venezuela and Sicily.

In years when such enterprises suffered losses, income taxes were reduced in the statements by the amounts they would have been reduced had our portions of the operations been integral parts of the parent company. Conversely, when such companies became profitable, no reduction was made in the income taxes shown in the consolidation because tax credit had been taken in prior years. All the companies operated profitably in 1959, with the exception of Fome-Cor and some exploration subsidiaries.

All earnings of the consolidated subsidiaries and associated companies are available for dividends with the exception of those of Chemstrand, whose dividends are limited to the terms of its indenture, and in some foreign countries dividends are still subject to exchange controls. However, assuming that our share of all such earnings had been received as dividends, we have included in each year's income taxes a provision for additional income and corporate dividend tax which we estimate would have been payable.

All dollar amounts are stated in millions except those relating to book values, per share earnings, dividends per share and capital per employe. Foreign currencies have been converted to U. S. dollars at exchange rates prevailing at each year's end, except long-term debt, capital stock, and property and related reserves, which have been converted at approximate rates in effect at dates of issuance or acquisition.

# SHAREOWNER

## IN PARENT COMPANY, DOMEST

## 50% OWNED AS

**Consolidating Only That Percentage of Associated Compa**

*(In millions)*

### ASSETS

| | 1959 | 1958 | 1957 | 1956 | 1955 | 10 YEARS AGO 1949 | 25 YEARS AGO 1934 |
|---|---|---|---|---|---|---|---|
| **Current Assets:** | | | | | | | |
| Cash | $ 32.5 | $ 37.0 | $ 36.7 | $ 32.9 | $ 59.3 | $ 27.4 | $ 3.5 |
| Marketable securities | 106.7 | 38.8 | 24.5 | 21.7 | 24.4 | 2.7 | .3 |
| Net receivables | 115.5 | 106.5 | 88.5 | 86.1 | 72.4 | 20.4 | 1.7 |
| Inventories | 125.7 | 117.7 | 122.6 | 113.9 | 100.0 | 34.1 | 4.1 |
| | 380.4 | 300.0 | 272.3 | 254.6 | 256.1 | 84.6 | 9.6 |
| **Investments, etc.** | 40.5 | 32.1 | 14.4 | 7.9 | 6.4 | 2.3 | 1.4 |
| **Property:** | | | | | | | |
| Land | 15.4 | 12.7 | 11.8 | 11.5 | 10.7 | 4.2 | 1.3 |
| Buildings | 140.5 | 138.2 | 128.7 | 114.5 | 98.0 | 39.7 | 3.6 |
| Machinery and equipment | 649.2 | 604.2 | 561.4 | 505.7 | 455.6 | 134.1 | 10.7 |
| Phosphate deposits | 6.9 | 6.2 | 6.1 | 5.9 | 5.6 | 1.5 | |
| Producing oil and gas properties | 76.6 | 74.9 | 67.7 | 64.6 | 59.5 | | |
| Undeveloped oil and gas leaseholds | 10.0 | 12.8 | 19.7 | 15.1 | 10.4 | | |
| Accumulated depreciation, etc. | *358.9* | *313.8* | *267.4* | *227.6* | *199.5* | *61.2* | *5.3* |
| Accumulated depletion | *25.6* | *24.4* | *22.3* | *21.2* | *19.6* | *.5* | |
| Net property | 514.1 | 510.8 | 505.7 | 468.5 | 420.7 | 117.8 | 10.3 |
| **Deferred Charges** | 16.0 | 14.7 | 12.7 | 7.2 | 7.0 | 1.6 | .2 |
| | $951.0 | $857.6 | $805.1 | $738.2 | $690.2 | $206.3 | $21.5 |

See explanation, page 15.
Italics indicate deduction.

ET INTERESTS

VD FOREIGN SUBSIDIARIES AND

TED COMPANIES

is Represented by Monsanto Shareowners' Equity

*(In millions)*

## LIABILITIES

| | 1959 | 1958 | 1957 | 1956 | 1955 | 10 YEARS AGO 1949 | 25 YEARS AGO 1934 |
|---|---|---|---|---|---|---|---|
| **Current Liabilities:** | | | | | | | |
| Accounts payable and accruals..... | $ 71.6 | $ 66.9 | $ 64.8 | $ 59.1 | $ 51.5 | $ 15.2 | $ 1.9 |
| Income taxes less tax notes..... | 49.4 | 33.0 | 31.3 | 25.5 | 13.2 | 4.0 | .6 |
| Sinking funds and notes payable... | 13.2 | 13.0 | 6.6 | 6.0 | 3.1 | .2 | |
| Employes' bonus awards..... | 3.1 | 2.0 | 3.3 | 3.0 | 3.1 | | |
| | 137.3 | 114.9 | 106.0 | 93.6 | 70.9 | 19.4 | 2.5 |
| **Debentures, Bonds, etc.**..... | 118.0 | 129.9 | 133.7 | 123.9 | 130.4 | 30.4 | .9 |
| **Income Debentures**..... | 141.0 | 116.0 | 91.0 | 91.0 | 91.0 | | |
| **Other Liabilities:** | | | | | | | |
| Deferred income taxes..... | 28.6 | 25.7 | 22.7 | 16.2 | 10.2 | .5 | |
| Pensions, etc..... | 1.2 | 2.0 | 2.8 | 4.2 | 4.4 | 7.6 | .5 |
| Employes' bonus—unawarded..... | 1.4 | 1.2 | 1.1 | 1.2 | .9 | | |
| | 31.2 | 28.9 | 26.6 | 21.6 | 15.5 | 8.1 | .5 |
| **Minority Interests in Subsidiaries**..... | 20.5 | 19.4 | 20.1 | 18.1 | 17.7 | 13.0 | 1.9 |
| **Capital Stock and Surplus:** | | | | | | | |
| Preference shares..... | | | | | | 33.0 | |
| Common shares..... | 46.3 | 44.5 | 44.5 | 42.9 | 42.0 | 21.4 | 8.6 |
| Paid-in surplus..... | 225.9 | 190.2 | 188.6 | 165.9 | 151.4 | 35.1 | 1.2 |
| Earned surplus..... | 230.8 | 213.8 | 194.6 | 181.2 | 171.3 | 45.9 | 5.9 |
| | 503.0 | 448.5 | 427.7 | 390.0 | 364.7 | 135.4 | 15.7 |
| | $951.0 | $857.6 | $805.1 | $738.2 | $690.2 | $206.3 | $21.5 |

SHAREOWNE

IN PARENT COMPANY, SU

Consolidating Only That Percentage of Associated Comp

*(In millions except per share earnings)*

| | 1959 | 1958 | 1957 | 1956 | 1955 | 10 YEARS AGO 1949 | 25 YEARS AGO 1934 |
|---|---|---|---|---|---|---|---|
| **Income:** | | | | | | | |
| Net sales | $811.4 | $714.4 | $708.0 | $653.8 | $630.4 | $185.1 | $17.5 |
| Other | 9.9 | 5.5 | 6.1 | 3.7 | 2.5 | 1.5 | .4 |
| | 821.3 | 719.9 | 714.1 | 657.5 | 632.9 | 186.6 | 17.9 |
| **Deductions:** | | | | | | | |
| Cost of goods sold | 584.0 | 531.3 | 515.0 | 467.7 | 434.9 | 131.1 | 12.4 |
| Selling, administrative, research | 98.4 | 90.9 | 87.4 | 88.1 | 83.0 | 23.2 | 2.3 |
| Provision for employes' bonus | 2.5 | .2 | 1.2 | 1.4 | 2.2 | | |
| Income charges | 14.5 | 14.6 | 14.4 | 11.5 | 11.4 | 2.4 | .2 |
| Minority interests | 1.5 | .9 | 1.0 | .9 | 1.0 | .4 | |
| | 700.9 | 637.9 | 619.0 | 569.6 | 532.5 | 157.1 | 14.9 |
| **Income Before Income Taxes** | 120.4 | 82.0 | 95.1 | 87.9 | 100.4 | 29.5 | 3.0 |
| **Provision for Income Taxes** | 58.7 | 39.1 | 46.2 | 42.1 | 50.1 | 12.2 | .4 |
| **Net Income** | $ 61.7 | $ 42.9 | $ 48.9 | $ 45.8 | $ 50.3 | $ 17.3 | $ 2.6 |
| **Per Common Share**(1) | $ 2.66 | $ 1.93 | $ 2.20 | $ 2.13 | $ 2.37 | $ 1.25 | $ .34 |

See explanation, page 15.
(1) Adjusted for splits.

## INTERESTS

## RIES AND ASSOCIATES

**is Represented by Monsanto Shareowners' Equity**

*(In millions except where italicized)*

| | 1959 | 1958 | 1957 | 1956 | 1955 | 10 YEARS AGO 1949 | 25 YEARS AGO 1934 |
|---|---|---|---|---|---|---|---|
| Depreciation, depletion, etc. | $ 64.1 | $ 60.6 | $ 53.3 | $ 46.8 | $ 44.7 | $ 10.3 | $ .9 |
| Book value a share[1] | *$21.72* | *$20.15* | *$19.24* | *$18.18* | *$17.37* | *$7.98* | *$2.01* |
| Gross additions to property | $ 76.1 | $ 72.6 | $ 90.1 | $ 98.7 | $ 61.8 | $ 16.6 | $ 2.0 |
| Employes[2] | *31,346* | *30,306* | *30,011* | *27,547* | *26,621* | *14,878* | *2,833* |
| Net working capital | $243.1 | $185.1 | $166.3 | $161.0 | $185.2 | $ 65.2 | $ 7.1 |
| Employed capital[3] | $782.5 | $713.8 | $672.5 | $623.0 | $603.8 | $178.8 | $18.5 |
| Employed capital per employe | *$24,963* | *$23,553* | *$22,408* | *$22,616* | *$22,681* | *$12,018* | *$6,530* |
| Parent company: | | | | | | | |
| Cash dividends on common shares | $ 22.4 | $ 22.2 | $ 21.5 | $ 21.0 | $ 20.3 | $ 8.6 | $ 1.0 |
| Per common share[1] | *$1.00* | *$1.00* | *$1.00* | *$1.00* | *$ .92* | *$ .67* | *$ .13* |
| Preference shares outstanding | | | | | | *330,116* | |
| Common shares outstanding[1] | 23.2 | 22.3 | 22.2 | 21.4 | 21.0 | 12.8 | 7.8 |
| Number of shareowners | *78,675* | *66,427* | *60,036* | *53,018* | *43,616* | *15,637* | *4,129* |

(1) Adjusted for splits. (2) Excluding employes of government plants. (3) Net worth and long term debt.

# FINANCIAL REVIEW

Financial statements of the parent company and its domestic and Canadian subsidiaries are presented on pages 22 through 25 and should be read in conjunction with the following comments and explanations. Comparative sales and income of the companies in this group alone were:

| | (In Thousands) 1959 | 1958 | Per Cent Increase *Decrease* |
|---|---|---|---|
| Sales: | | | |
| First quarter | $149,792 | $127,475 | 17.5 |
| Second quarter | 165,150 | 137,571 | 20.0 |
| Third quarter | 150,944 | 138,020 | 9.4 |
| Fourth quarter | 149,491 | 144,890 | 3.2 |
| | $615,377 | $547,956 | 12.3 |
| Income: | | | |
| First quarter | $ 11,339 | $ 6,066 | 86.9 |
| Second quarter | 14,140 | 6,933 | 104.0 |
| Third quarter | 10,543 | 7,959 | 32.5 |
| Fourth quarter | 12,955 | 13,592 | *4.7* |
| | $ 48,977 | $ 34,550 | 41.8 |

| | 1959 | 1958 | |
|---|---|---|---|
| | | As Reported | Adjusted for 1959 Stock Dividend |
| Per share earnings were: | | | |
| First quarter | $ .49 | $ .27 | $ .27 |
| Second quarter | .61 | .31 | .30 |
| Third quarter | .46 | .36 | .35 |
| Fourth quarter | .56 | .61 | .60 |
| | $2.12 | $1.55 | $1.52 |
| Shares outstanding December 31 | 23,156,857 | 22,256,600 | |

Equity in the unaudited 1959 net income of unconsolidated subsidiaries was approximately $4,502,000 and of 50 per cent-owned companies, $13,141,000. Dividends of $3,755,469 were received from these companies in 1959 and have been included in the parent's income.

| | |
|---|---|
| Equity in the unaudited net assets of unconsolidated subsidiaries was | $ 35,627,000 |
| And in 50% owned companies was | 77,163,000 |
| Totaling | $112,790,000 |
| Which exceeded our carrying value of | 57,548,000 |
| By | $ 55,242,000 |

Charges against income for depreciation, obsolescence and depletion totaled $46,696,006, of which $43,622,681 was depreciation and obsolescence, and $3,073,325 depletion of mines and wells. In 1958, such charges were $42,451,789 and $2,616,959.

Depreciation in excess of normal provided by the sum of the years digits method of computing depreciation on recent property additions increased from $6,533,635 in 1958 to $6,592,788.

Accumulated depreciation and depletion at year end:

| | 1959 | 1958 |
|---|---|---|
| Depreciation | $281,364,253 | $251,372,069 |
| Depletion | 25,589,565 | 24,414,999 |
| Total | $306,953,818 | $275,787,068 |

Repair and maintenance charges included in operating expenses were $45,964,622 in 1959 and $37,719,105 in 1958.

Inventories are valued substantially at the lower of cost or market. Valuation of approximately one-sixth has been determined on the last-in, first-out basis. Annual rates of inventory turnover were 5.3 in 1959 and 4.7 in 1958.

Reserves for doubtful accounts were $1,364,741 in 1959 and $1,277,208 in 1958.

The company issued in December and sold at par to an institutional investor an additional $25 millions of 4¼ per cent income debentures for which it had a prior commitment. The series, including the $25 millions sold in March, 1958, matures in 2008; a sinking fund begins in 1988. The interest on these debentures, as well as on the $91 millions of 3¾ per cent income debentures sold in 1952 and 1955, is cumulative but payable currently only if earned.

The May 1, 1961 and 1962, sinking fund payments on the 2.65 per cent debentures were anticipated by the purchase in 1959 of $2 millions of these debentures. The May 1, 1960, payment was anticipated by the purchase of $1 million of debentures in 1958.

During 1959, four quarterly cash dividends of 25 cents each were paid on the common shares. Also, a share dividend of two per cent was paid in December.

Until September 30, 1959, Monsanto had two stock option plans in effect: the plan authorized by shareowners in 1951 for key employes and the Employes' Stock Plan, authorized by shareowners in 1956 for hourly and salaried employes, except participants of the preceding plan. The status of the authorized shares of each and the changes occurring during the year were:

| | Stock Option Plan | Employes' Stock Plan |
|---|---|---|
| Options outstanding 1/1/59 | 658,774 | 179,057 |
| Unoptioned 1/1/59 | 60,341 | — |
| Optioned during year | 2,500 | — |
| Exercised during year | 249,912 | 169,854 |
| Terminated during year | — | 9,203 |
| Options outstanding 12/31/59 | 420,809* | — |
| Unoptioned 12/31/59 | 59,035* | — |

*Adjusted for 1959 two per cent stock dividend.

Under the Stock Option Plan, 208 options are outstanding, at prices ranging from $27.06 to $45.10 a share, the prices having been adjusted for the 1955 three-for-one split and the 1955, 1956, 1957 and 1959 stock dividends of two per cent each. The Employes' Stock Plan expired on September 30, 1959, when the then outstanding options were either exercised or terminated, and cash balances returned to employes with 3½ per cent interest.

# PARENT COMPANY, DOMESTIC

## STATEMENT OF FINANCIAL POSITION

### ASSETS

| | 1959 | 1958 |
|---|---|---|
| **Current Assets:** | | |
| Cash | $ 21,814,084 | $ 20,264,731 |
| Marketable securities | 91,439,192 | 35,496,872 |
| Net receivables | 84,412,412 | 79,620,295 |
| Inventories | 88,732,867 | 84,921,615 |
| | 286,398,555 | 220,303,513 |
| **Investments and Miscellaneous Assets:** | | |
| Investment in and advances to subsidiaries | 15,256,512 | 13,946,354 |
| Investment in and advances to associates | 42,291,292 | 43,691,192 |
| Common shares held for bonus awards | 907,438 | 763,937 |
| Miscellaneous investments and receivables | 30,945,352 | 25,558,653 |
| | 89,400,594 | 83,960,136 |
| **Property, Plant and Equipment** | 662,306,737 | 626,844,713 |
| Less accumulated depreciation and depletion | 306,953,818 | 275,787,068 |
| Net property | 355,352,919 | 351,057,645 |
| **Deferred Charges** | 10,554,688 | 8,770,968 |
| | $741,706,756 | $664,092,262 |

The above statement should be read in conjunction with pages 20 and 21 of this report.

# ID CANADIAN SUBSIDIARIES

## DECEMBER 31, 1959 AND 1958

### LIABILITIES

| | 1959 | 1958 |
|---|---|---|
| **Current Liabilities:** | | |
| Accounts payable and accruals | $ 52,927,443 | $ 51,117,509 |
| Income taxes | 31,829,265 | 18,027,514 |
| Sinking fund payments (less $1,000,000 debentures in treasury) | 1,790,000 | 1,790,000 |
| Employes' bonus awards | 2,713,791 | 1,917,853 |
| | 89,260,499 | 72,852,876 |
| **Debentures and Bonds—Less Current Portion Above:** | | |
| 3¼% Debentures, due 1968 | 13,750,000 | 15,000,000 |
| 2.65% Debentures, due 1971 (less in treasury, $2,000,000 in 1959 and $1,000,000 in 1958) | 24,000,000 | 26,000,000 |
| 3⅝% Debentures, due 1972 | 12,000,000 | 12,500,000 |
| Other (less in treasury, $289,500 in 1959 and $80,000 in 1958) | 290,500 | 540,000 |
| | 50,040,500 | 54,040,000 |
| **Income Debentures:** | | |
| 3¾%, due 2002 | 91,000,000 | 91,000,000 |
| 4¼%, due 2008 | 50,000,000 | 25,000,000 |
| | 141,000,000 | 116,000,000 |
| **Other Liabilities:** | | |
| Deferred income taxes | 15,055,317 | 15,754,317 |
| Pensions | 802,126 | 1,660,854 |
| Employes' bonus—unawarded | 722,462 | 692,215 |
| | 16,579,905 | 18,107,386 |
| **Capital Stock and Surplus:** | | |
| Common shares—authorized, 25,000,000 shares, par value $2 each; outstanding, 23,156,857 shares in 1959 and 22,256,600 shares in 1958 | 46,313,714 | 44,513,200 |
| Surplus: | | |
| Paid-in | 215,860,588 | 180,406,603 |
| Earned | 182,651,550 | 178,172,197 |
| | 444,825,852 | 403,092,000 |
| | $741,706,756 | $664,092,262 |

# STATEMENT OF INCOME

| | 1959 | 1958 | Increase *Decrease* |
|---|---|---|---|
| **Income:** | | | |
| Net sales | $615,377,078 | $547,955,647 | $67,421,431 |
| Dividends | 4,337,151 | 3,639,676 | 697,475 |
| Other | 7,425,912 | 4,659,394 | 2,766,518 |
| | 627,140,141 | 556,254,717 | 70,885,424 |
| **Deductions:** | | | |
| Cost of goods sold | 458,323,515 | 422,265,756 | 36,057,759 |
| Selling, administrative and research expenses | 71,997,690 | 66,962,098 | 5,035,592 |
| Provision for employes' bonus | 1,884,502 | | 1,884,502 |
| Interest | 6,356,721 | 6,272,363 | 84,358 |
| Other | 2,804,556 | 3,152,983 | *348,427* |
| | 541,366,984 | 498,653,200 | 42,713,784 |
| **Income Before Income Taxes** | 85,773,157 | 57,601,517 | 28,171,640 |
| **Provision for Income Taxes:** | | | |
| Current | 36,796,000 | 22,123,000 | 14,673,000 |
| Deferred | | 929,000 | *929,000* |
| | 36,796,000 | 23,052,000 | 13,744,000 |
| **Net Income** | $ 48,977,157 | $ 34,549,517 | $14,427,640 |

The above statement should be read in conjunction with pages 20 and 21 of this report.

# STATEMENT OF SURPLUS

## PAID-IN SURPLUS

| | 1959 | 1958 |
|---|---|---|
| **Balance at Beginning of Year** | $180,406,603 | $179,594,503 |
| **Additions:** | | |
| Excess of approximate market value of common capital stock distributed as a stock dividend over the par value thereof | 21,178,204 | |
| Excess of amounts received over the par value of common capital stock issued under stock option plans | 13,006,190 | 812,100 |
| Excess of approximate market value over the par value of common capital stock issued for all of the outstanding stock of Nitro Industrial Corporation | 1,269,591 | |
| **Balance at End of Year** | $215,860,588 | $180,406,603 |

## EARNED SURPLUS

| | | |
|---|---|---|
| **Balance at Beginning of Year** | $178,172,197 | $165,840,689 |
| **Add—Net Income for the Year** | 48,977,157 | 34,549,517 |
| | 227,149,354 | 200,390,206 |
| **Deductions:** | | |
| Dividends on common capital stock: | | |
| Cash—at the rate of $1 a share | 22,413,968 | 22,218,009 |
| Stock—2% | 22,083,836 | |
| | 44,497,804 | 22,218,009 |
| **Balance at End of Year** | $182,651,550 | $178,172,197 |

The above statement should be read in conjunction with pages 20 and 21 of this report.

# ACCOUNTANTS' OPINION

HASKINS & SELLS
CERTIFIED PUBLIC ACCOUNTANTS

BOATMEN'S BANK BUILDING
SAINT LOUIS 2

Monsanto Chemical Company:

We have examined the statement of consolidated financial position of Monsanto Chemical Company and its domestic and Canadian subsidiary companies as of December 31, 1959 and the related statements of consolidated income and surplus for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the accompanying statement of consolidated financial position and statements of consolidated income and surplus (pages 22 through 25) present fairly the financial position of Monsanto Chemical Company and its domestic and Canadian subsidiaries at December 31, 1959 and the results of their operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

January 27, 1960.

Haskins & Sells

# PARENT COMPANY,

# DOMESTIC AND CANADIAN SUBSIDIARIES

## SOURCE AND DISPOSITION OF FUNDS

*(In Thousands)*

| | TOTAL | 1959 | 1958 | 1957 | 1956 | 1955 |
|---|---|---|---|---|---|---|
| **Source of Funds:** | | | | | | |
| Net income | $201,759 | $ 48,977 | $ 34,550 | $37,416 | $38,646 | $ 42,170 |
| Lion Oil balance at beginning of year | 10,389 | | | | | 10,389 |
| Provisions for: | | | | | | |
| Depreciation, etc. | 207,908 | 46,696 | 45,069 | 42,665 | 38,449 | 35,029 |
| Deferred income taxes | 14,504 | | 929 | 3,976 | 4,769 | 4,830 |
| Sale of 4¼% income debentures | 50,000 | 25,000 | 25,000 | | | |
| Sale of 3¾% income debentures | 25,000 | | | | | 25,000 |
| Common stock issued under options | 18,755 | 13,846 | 872 | 558 | 799 | 2,680 |
| Other—net | 16,517 | 5,489 | 6,417 | 28 | 3,602 | 981 |
| | 544,832 | 140,008 | 112,837 | 84,643 | 86,265 | 121,079 |
| **Disposition of Funds:** | | | | | | |
| Dividends paid: | | | | | | |
| Preference | 601 | | | | | 601 |
| Common | 107,484 | 22,414 | 22,218 | 21,517 | 20,992 | 20,343 |
| | 108,085 | 22,414 | 22,218 | 21,517 | 20,992 | 20,944 |
| Redemption of preference stock: | | | | | | |
| Parent company | 15,600 | | | | | 15,600 |
| Canadian subsidiary | 850 | | | | | 850 |
| Plant additions and replacements | 269,400 | 58,013 | 42,588 | 54,404 | 69,239 | 45,156 |
| Investment in affiliated companies | 42,263 | 5,894 | 23,433 | 6,316 | *553* | 7,173 |
| Sinking fund payments | 15,119 | 3,999 | 3,870 | 2,750 | 2,750 | 1,750 |
| Increase—*decrease* in working capital[1] | 9,736 | *7,804* | 3,439 | *665* | 3,105 | 11,661 |
| | 461,053 | 82,516 | 95,548 | 84,322 | 95,533 | 103,134 |
| **Increase—*Decrease* in Cash and Securities** | $ 83,779 | $ 57,492 | $ 17,289 | $ 321 | *$ 9,268* | $ 17,945 |

Italics indicate decrease.

(1) Exclusive of cash and securities.

## PETROLEUM OPERATING DATA

| | 1959 | 1958 | 1957 | 1956 | 1955 |
|---|---|---|---|---|---|
| Expenditures for Exploration..... | $11,374,804 | $11,765,858 | $15,647,840 | $20,175,034 | $13,245,034 |
| Portion Capitalized..... | $ 7,869,800 | $ 8,031,826 | $11,401,163 | $14,656,754 | $ 9,452,742 |
| Portion Expensed..... | $ 3,505,004 | $ 3,734,032 | $ 4,246,677 | $ 5,518,280 | $ 3,792,292 |
| Leaseholds Expired and Abandoned.... | $ 4,363,793 | $ 4,038,948 | $ 2,654,890 | $ 1,452,725 | $ 964,766 |
| Number of Producing Wells (net)..... | 1,167 | 1,157 | 1,141 | 1,098 | 1,062 |
| Natural Gas Produced—Net MCF[1]..... | 22,454,760 | 21,161,443 | 21,456,156 | 20,906,875 | 18,622,567 |
| Liquefied Pet. Gas Produced—Bbls..... | 936,923 | 733,306 | 884,804 | 994,517 | 744,160 |
| Gross Crude Oil Produced—Barrels..... | 10,300,226 | 8,050,160 | 8,568,035 | 9,322,559 | 9,415,719 |
| Net Crude Oil Produced—Barrels..... | 8,927,401 | 7,103,196 | 7,502,654 | 8,163,161 | 8,244,486 |
| Average Crude Price Per Barrel[2]..... | $2.87 | $2.90 | $2.98 | $2.75 | $2.74 |
| Domestic Undeveloped Acreage..... | 629,463 | 1,301,657 | 2,392,507 | 2,250,591 | 1,808,552 |
| Domestic Producing Acreage..... | 83,450 | 79,203 | 78,141 | 71,800 | 66,144 |
| Crude Oil Run to Stills—Barrels..... | 10,943,015 | 10,392,687 | 10,527,774 | 8,393,703 | 9,294,844 |
| Daily Average Crude Oil Runs—Barrels | 29,981 | 28,473 | 28,843 | 22,934 | 25,465 |
| Refinery Production—Barrels..... | 11,758,846 | 11,375,494 | 11,347,931 | 8,943,546 | 10,180,126 |
| Station Sales—Gallons..... | 130,968,526 | 114,177,697 | 111,562,216 | 116,057,474 | 109,476,394 |
| Refined Oil Sales—Gallons[3]..... | 455,425,433 | 478,416,598 | 455,120,546 | 372,239,287 | 411,997,884 |

(1) Excludes gas returned to formations.
(2) At end of year.
(3) Includes station sales.

# BOARD OF DIRECTORS

EDGAR M. QUEENY, Board Chairman, 62. Cornell, class of 1919. Lieutenant jg, U. S. Navy, World War I. Joined Monsanto, which was founded by his father, in 1919. Served in export department, sales department; later sales manager and vice president. Director since 1919. President from 1928 to 1943 when elected board chairman. Elected to Executive Committee, 1939; chairman of Finance Committee, January, 1960. Trustee, American Museum of Natural History. Director of The Chemstrand Corporation, American Airlines, Union Electric Company of St. Louis, Sicedison, S.p.A., Italy, and Monsanto Canada Limited.

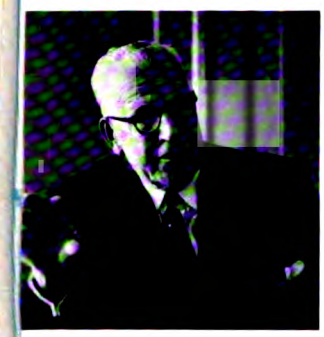
FREDRICK M. EATON, Board Member on leave of absence while in government service, 54. BA, Harvard; LLB, Harvard Law School. Partner in law firm of Shearman & Sterling & Wright. Elected to Monsanto's board, 1947; member of Finance, Bonus, Stock Option, Auditing Committees. Chairman, American delegation to 10-nation disarmament committee, meeting in Geneva in 1960. Director of First National City Trust Co., New York Life Insurance Company, Great American Insurance Company, Owens-Corning Fiberglas Corporation.

CARROLL A. HOCHWALT, Vice President of Research, Development and Engineering, 60. BChE, DSc, University of Dayton. Research chemist, General Motors Research Corporation; production manager, Ethyl Gasoline Corporation; vice president, Thomas & Hochwalt Laboratories, Dayton, Ohio. Monsanto acquired Thomas & Hochwalt Laboratories in 1936. Associate director of Central Research Department; later director. Vice president, 1947; elected to board, 1949; elected to Executive Committee, 1950. Director of The Chemstrand Corporation, Sicedison, S.p.A., Italy, Kettering Foundation, Boatmen's National Bank of St. Louis. Chairman, President's Council, St. Louis University.

CHARLES ALLEN THOMAS, President, 59. Transylvania and M.I.T. AB, DSc, LLD. Research chemist, General Motors Research Corporation and Ethyl Gasoline Corporation; president of Thomas & Hochwalt Laboratories, Dayton, Ohio. Joined Monsanto, 1936, as director of Central Research Department when Monsanto acquired Thomas & Hochwalt Laboratories; later vice president and technical director, executive vice president, chairman of Executive Committee. Director since 1942. Elected president, 1951. Director of The Chemstrand Corporation, Southwestern Bell Telephone Company, St. Louis Union Trust Company, First National Bank in St. Louis. Member, National Academy of Sciences; Board of Trustees, Carnegie Corporation of New York.

JOHN L. GILLIS, Vice President of Marketing, 48. BS, Washington University. Joined Monsanto as assistant export manager, 1933; then export manager, assistant director and director, former Foreign Department; later general manager of former Merrimac Division; elected vice president, 1950; appointed general manager, Organic Chemicals Division, 1951; appointed vice president of marketing, 1953; elected to board, 1955; elected to Executive Committee, 1958. Director of Mobay Chemical Company, The Chemstrand Corporation, St. Louis County National Bank, General Contract Finance Corp. and Securities Investment Co.

HERBERT HOOVER JR., Board Member, 56, AB, Stanford University; MBA, Harvard University. President, later board chairman, United Geophysical Corporation, 1934 to 1953; consultant to Secretary of State, 1953; Under Secretary of State, 1954 to 1957. Consulting engineer since 1957. Elected to Monsanto's board, 1958. Elected to Finance Committee, 1959. Director of Southern California Edison Company, Lockheed Aircraft Company; trustee, University of Southern California, Claremont Men's College, Freedoms Foundation of Valley Forge, Boys' Clubs of America.



TRUEMAN M. MARTIN, Vice President of Oil and Gas Operations; President of Lion Oil Company Division, 64. BA, Brown's College. With Crane Company, Stromberg Motor Devices Company, Advanced Petroleum Corporation, Diamond Petroleum Company from 1914 through 1929. First Lieutenant, U. S. Army, World War I. Joined Lion Oil Company, 1929, as vice president and director; later executive vice president, then president in 1947. Elected Monsanto vice president and director, 1955. Elected to Executive Committee as vice president of oil and gas operations, 1958.

CHARLES H. SOMMER, Executive Vice President, 49. BS, chemistry, University of Arizona. Joined Monsanto, 1934, as a salesman; later product sales manager, Organic Chemicals Division; then assistant general manager of sales, assistant coordinator of sales, assistant division general manager. Appointed general manager, former Merrimac Division, 1951. Elected a vice president and appointed general manager of Organic Chemicals Division, 1954. Elected to board and to Executive Committee, 1959; elected executive vice president, 1959.

FELIX N. WILLIAMS, Vice President of Manufacturing, 58. University of Virginia, 1923; joined Swann Chemical Company (acquired by Monsanto in 1935) in production department; later research department, purchasing agent, assistant plant manager, plant manager. Supervised construction of Monsanto, Tenn., elemental phosphorus plant, later plant manager there. Production manager, former Phosphate Division; general manager, Plastics Division. Elected vice president, 1944; elected to board, 1947; member, Executive Committee, 1950. Appointed vice president of manufacturing, 1954. Director of Monsanto Canada Limited, Mercantile Trust Company of St. Louis, Wabash Railroad Company.

## BOARD OF DIRECTORS *(Continued)*

WILLIAM W. SCHNEIDER, Vice President of Finance and Law, 62. LLB, St. Louis University. Lawyer with insurance company before joining Monsanto, 1921, as assistant in Legal Department; later director, Legal Department; corporation secretary, 1925-1951. Elected vice president, 1947, board member, 1951; treasurer, 1953 to 1956; member, Finance Committee, 1954; appointed vice president of finance and law, 1954; member, Executive Committee, 1956. Director of Monsanto Canada Limited and Mobay Chemical Company.

ALAN H. TEMPLE, Board Member, 63. B. Litt., Journalism, Columbia University. Former managing editor and editor, COMMERCE AND FINANCE; financial editor, NORTH AMERICAN REVIEW; president of Theo. H. Price Publishing Company. Joined National City Bank of New York as a statistician; later vice president and executive vice president. Director since 1956 and, since 1958, vice chairman. Elected to Monsanto's board, 1959; elected to Finance Committee, January, 1960. Director of International Banking Corporation, Mead Corporation, Moore Corporation, Limited, Prudential Insurance Company of Great Britain (in N. Y.), Seaboard Surety Co. Trustee, Atlantic Mutual Insurance Co.

## DIVISION GENERAL MANAGERS

H. HAROLD BIBLE, Vice President; General Manager, Lion Oil Company Division, 43. BS, chemical engineering, University of Oklahoma. With Humble Oil Company before joining Lion, 1942, as synthesis supervisor, Ozark Ordnance Works, operated by Lion. Plant later became Lion's El Dorado chemical plant. Became assistant manager of manufacturing and later director of manufacturing. Elected Lion vice president and appointed assistant general manager of Lion division, 1957. Elected Monsanto vice president and appointed general manager of Lion Oil Company Division, 1958.

JOHN L. CHRISTIAN, Vice President; General Manager, Inorganic Chemicals Division, 49. BS, chemical engineering, Alabama Polytechnic; post graduate work at Columbia. Joined research department of Swann Chemical Company, 1933 (which was acquired by Monsanto in 1935), later in pilot plant and production departments; superintendent of furnaces at Monsanto, Tenn., elemental phosphorus plant; then plant manager. Appointed general manager of Phosphate Division (now Inorganic Chemicals Division), 1948. Elected vice president, 1954.

## DIVISION GENERAL MANAGERS *(Continued)*

ROBERT M. MORRIS, Vice President; General Manager, Organic Chemicals Division, 46. BS, mechanical engineering, Washington University. Joined Monsanto, 1936, as an area engineer. Then design engineer, Plastics Division; superintendent of maintenance, later production superintendent, Longhorn Ordnance Works; assistant plant manager, Texas City; plant manager, Springfield; appointed director of manufacturing, Organic Chemicals Division, 1953; appointed assistant general manager, 1956. Elected a vice president and appointed division general manager, 1959.

HOWARD K. NASON, Vice President; General Manager, Research & Engineering Division, 46. BA, University of Kansas. Joined Monsanto, 1936, as research chemist, Organic Chemicals Division; later assistant director of research, Plastics Division; director of development, associate director and director, former Central Research Department; assistant to vice president for research, development and patents; director of research, Organic Chemicals Division. Elected vice president, appointed general manager, Research & Engineering Division, 1956.

MARSHALL E. YOUNG, Vice President; General Manager, Overseas Division, 47. Washington University. Joined Monsanto, 1934, in service department; later in export department; then general export manager. Assistant director, then director, former Foreign Department. Commercial manager, Overseas Division, then assistant general manager. Elected vice president and appointed general manager, 1955. Director of Monsanto affiliated companies in England, Australia, India, Canada, Japan, France, Italy, Belgium and Spain.

ROBERT K. MUELLER, Vice President; General Manager, Plastics Division, 46. BS, chemical engineering, Washington University; MS, chemistry, University of Michigan. Chemist, Sinclair Refining Company. Joined Monsanto, 1935, as a control chemist; operating superintendent, Plastics Division; operating superintendent, general production superintendent, plant manager, Longhorn Ordnance Works; plant manager, assistant production manager, production manager, assistant general manager, Plastics Division, before appointment as general manager, 1952. Elected vice president, 1954. President and director of Shawinigan Resins Corporation; director of Plax Corporation, Fome-Cor Corporation, Valley Bank & Trust Company, Springfield, Mass.

J. RUSSELL WILSON, Vice President; General Manager, Domestic Subsidiaries & Affiliates Division, 55. BS, chemical engineering, Auburn; MS, George Washington University; LLB, Kent. Chemist, U. S. Department of Agriculture; examiner, U. S. Patent Office; attorney, Standard Oil Company of Indiana. Joined Monsanto, 1938, as member of Patent Department; later director of Patent Department then of former General Development Department; elected vice president, appointed general manager of Research & Engineering Division, 1954; appointed to present position, 1956. Director of The Chemstrand Corporation, Mobay Chemical Company, Shawinigan Resins Corporation, Plax Corporation and Fome-Cor Corporation.

## VICE PRESIDENT OF PLANNING AND CONTROL

IRVING C. SMITH, Vice President of Planning and Control, 50. BASc, chemical engineering; MASc, chemistry, University of British Columbia. With Canadian Department of Agriculture; I. F. Laucks, Ltd., of Canada which Monsanto purchased in 1944. Became vice president and director of Monsanto Canada Limited, then assistant general manager of former Western Division at Seattle. Became division general manager, 1949. Then assistant to the president and chairman, Budget Committee. Elected controller and Accounting Department director, 1955. Elected vice president of planning and control, 1958.

## STAFF DEPARTMENT DIRECTORS

EDWIN J. CUNNINGHAM, Controller; Accounting Department Director, 62. Attended St. Mary's College; BCS, St. Louis University. Was an auditor with Price, Waterhouse & Co., before joining Monsanto's Accounting Department in 1929. Was elected assistant controller in 1931. In 1958, was elected controller and appointed Accounting Department director.

PATRICK J. DOWD, Treasurer; Treasury Department Director, 47. CPA, Washington University. Auditor, Farm Credit Administration before joining Monsanto in 1941 as director of payrolls and pensions. Later, director of internal auditing. Appointed executive officer, Overseas Division, 1954. Elected treasurer and appointed Treasury Department director, 1958.

EMBERT W. DWYER, Personnel & Administrative Services Department Director, 51. LLB, Washington University. Practiced law, served with Missouri Division of Employment Security and was personnel manager, Curtiss-Wright Corporation, St. Louis, before joining Monsanto as personnel director, Plastics Division, 1945; later director industrial relations, former Industrial and Public Relations Department; then assistant director, Personnel Relations Department. Appointed to present position, 1954.

WILLIAM R. FARRELL, Marketing Services Department Director, 52. BA, business administration, University of Michigan. Was vice president, A. C. Nielsen Company, New York; vice president, Benton & Bowles, New York; vice president, Kastor, Farrell, Chesley & Clifford Inc., New York; first vice president, Ward Wheelock Company, Philadelphia. Joined Monsanto, 1954, as manager of advertising; appointed director of advertising, 1955; appointed to present position, 1959.

DAN J. FORRESTAL, Public Relations Department Director, 47. St. Louis University. Was assistant managing editor, St. Louis GLOBE-DEMOCRAT. Joined Monsanto as assistant director, Industrial and Public Relations Department (now Public Relations Department), 1947. Later, manager of public relations. Appointed to present position, 1958.

HOWARD J. HEFFERNAN, Purchasing and Traffic Department Director, 62. Lafayette and Fordham Law School. Was with Miner Edgar Company, New York; was a salesman with Merrimac Chemical Company, which Monsanto acquired in 1929. Later, branch manager, New York; assistant general manager of sales, then general manager of sales, former Merrimac Division. Appointed to present position, 1953.

R. EMMET KELLY, M.D., F.A.C.P., Medical Department Director, 50. BS, MD degrees, St. Louis University. In private practice before joining Monsanto in 1936 as plant physician, John F. Queeny Plant. Lieutenant Colonel, Army Medical Corps, World War II. Appointed director, Medical Department, 1946.

EDWIN J. PUTZELL JR., Corporate Secretary; Law Department Director, 47. BA, Tulane; LLB, Harvard Law School. Was with law firm of Donovan, Leisure, Newton and Lumbard, New York and Washington. Executive Officer, OSS; Lieutenant, U. S. Navy, World War II. Joined Monsanto, 1945, as assistant treasurer; then assistant to executive vice president; attorney in Law Department and assistant secretary. Elected secretary, 1951; appointed director of Law Department, 1954.

J. RUSSELL WILSON, Patent Department Director. Mr. Wilson also is general manager of the Domestic Subsidiaries & Affiliates Division. His biography and photograph are on page 31.

# DIRECTORS AND OFFICERS

## BOARD OF DIRECTORS

Edgar M. Queeny, *Chairman* ..... St. Louis
Fredrick M. Eaton ..... New York
John L. Gillis ..... St. Louis
Carroll A. Hochwalt ..... St. Louis
Herbert Hoover Jr. ..... Los Angeles
Trueman M. Martin ..... El Dorado, Ark.
William W. Schneider ..... St. Louis
Charles H. Sommer ..... St. Louis
Alan H. Temple ..... New York
Charles Allen Thomas ..... St. Louis
Felix N. Williams ..... St. Louis

## EXECUTIVE COMMITTEE

Charles Allen Thomas, *Chairman*

John L. Gillis — Edgar M. Queeny
Carroll A. Hochwalt — William W. Schneider
Trueman M. Martin — Charles H. Sommer
Felix N. Williams

## FINANCE COMMITTEE

Edgar M. Queeny, *Chairman*

Fredrick M. Eaton — William W. Schneider
Herbert Hoover Jr. — Alan H. Temple
Charles Allen Thomas

### Transfer Agent

Morgan Guaranty Trust Company of New York

### Registrar

The Chase Manhattan Bank

## OFFICERS

Edgar M. Queeny ..... *Chairman, Board of Directors*
Charles Allen Thomas ..... *President*
Charles H. Sommer ..... *Executive Vice President*
John L. Gillis ..... *Vice President*
Carroll A. Hochwalt ..... *Vice President*
Trueman M. Martin ..... *Vice President*
William W. Schneider ..... *Vice President*
Felix N. Williams ..... *Vice President*

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H. Harold Bible ..... *Vice President*
John L. Christian ..... *Vice President*
Robert M. Morris ..... *Vice President*
Robert K. Mueller ..... *Vice President*
Howard K. Nason ..... *Vice President*
Irving C. Smith ..... *Vice President*
J. Russell Wilson ..... *Vice President*
Marshall E. Young ..... *Vice President*

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Edwin J. Cunningham ..... *Controller*
Edwin J. Putzell Jr. ..... *Secretary*
Patrick J. Dowd ..... *Treasurer*

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Lloyd R. Cole ..... *Assistant Controller*
Alfred W. Long ..... *Assistant Controller*
Walter C. Thilking ..... *Assistant Controller*
Earl J. Wipfler ..... *Assistant Controller*
Charles E. Caspari Jr. ..... *Assistant Secretary*
Jeff Davis ..... *Assistant Secretary*
John N. Ehlers ..... *Assistant Secretary*
Franklin C. Rehfeld ..... *Assistant Secretary*
John F. Martin ..... *Assistant Treasurer*
J. Robert Matlock ..... *Assistant Treasurer*
Rolla H. Stocke ..... *Assistant Treasurer*

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### Regional Vice Presidents

Roy L. Brandenburger — Edward W. Gamble Jr.
Victor E. Williams

MONSANTO CHEMICAL COMPANY • 800 N. LINDBERGH BLVD. • ST. LOUIS 66, MO.

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Monsanto

# ANNUAL REPORT

1960

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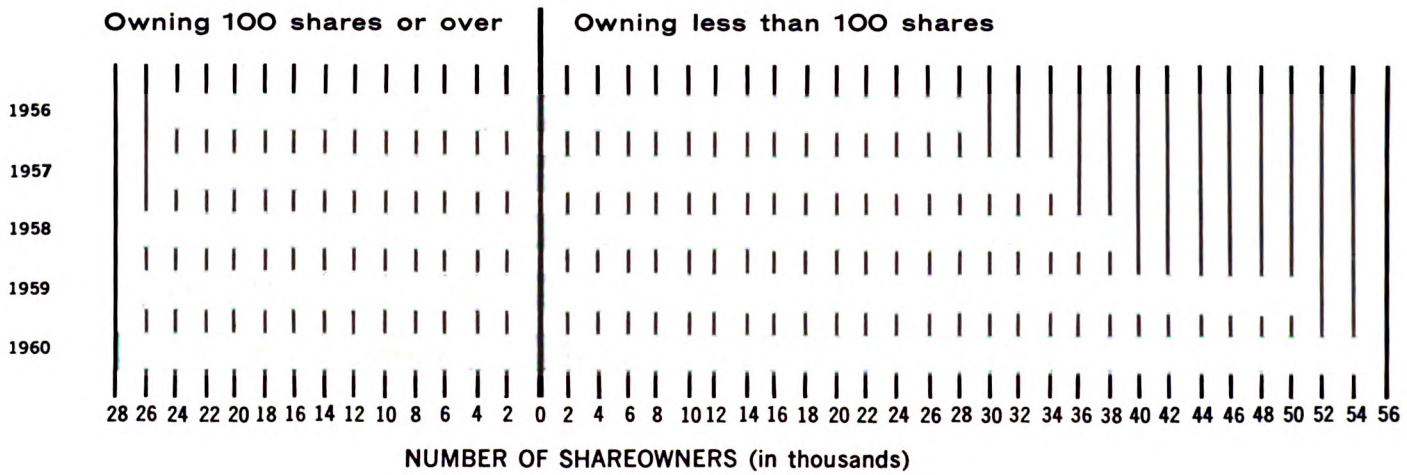
*The next Annual Meeting of the shareowners of the Company is to be held on Thursday, March 23, 1961, at the Company's General Offices, 800 North Lindbergh Boulevard, St. Louis County, Missouri. A formal notice of the meeting, together with a proxy statement and form of proxy, is being mailed to each shareowner.*

## SHAREOWNERS OF RECORD

| | 1960 | | 1959 | | 1958 | | 1957 | | 1956 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Number of Shareowners | Number of Shares | Number of Shareowners | Number of Shares | Number of Shareowners | Number of Shares | Number of Shareowners | Number of Shares | Number of Shareowners | Number of Shares |
| Men | 29,953 | 4,810,770 | 28,830 | 4,856,599 | 24,990 | 4,752,196 | 22,877 | 4,811,506 | 20,412 | 4,788,326 |
| Women | 24,680 | 3,682,808 | 23,629 | 3,673,086 | 21,460 | 3,678,163 | 20,017 | 3,799,064 | 18,433 | 3,667,225 |
| Joint Accounts | 18,173 | 923,112 | 16,654 | 862,573 | 11,973 | 724,561 | 9,756 | 648,250 | 7,641 | 563,826 |
| Charitable Institutions | 263 | 130,699 | 255 | 169,421 | 265 | 179,961 | 288 | 206,025 | 145 | 147,082 |
| Educational Institutions | 107 | 151,581 | 106 | 92,336 | 114 | 131,892 | 139 | 145,224 | 117 | 117,618 |
| Estates and Trusts | 7,755 | 1,804,416 | 6,458 | 1,666,564 | 5,260 | 1,954,219 | 4,716 | 2,004,601 | 4,155 | 2,722,940 |
| Insurance Companies | 178 | 782,364 | 177 | 722,566 | 169 | 772,671 | 179 | 767,352 | 180 | 793,439 |
| Brokers and Nominees | 1,063 | 8,666,965 | 1,312 | 9,953,829 | 1,126 | 8,989,736 | 1,158 | 8,856,181 | 971 | 7,723,290 |
| All Others | 1,637 | 6,242,474 | 1,254 | 1,159,883 | 1,070 | 1,073,201 | 906 | 988,426 | 964 | 922,715 |
| Total | 83,809 | 27,195,189 | 78,675 | 23,156,857 | 66,427 | 22,256,600 | 60,036 | 22,226,629 | 53,018 | 21,446,461 |

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## SUMMARY OF INCOME AND EXPENSES

*(In Thousands of Dollars Except Per Share Figures)*

| | 1960 | 1959 |
|---|---|---|
| **Income:** | | |
| From sale of products | $890,114 | $875,012 |
| From licenses, dividends, interest, etc. | 10,411 | 10,220 |
| | 900,525 | 885,232 |
| **Deductions from Income:** | | |
| For raw materials, fuel, supplies, etc. | 459,459 | 448,590 |
| For wages and salaries to employes | 209,683 | 193,338 |
| For depreciation, obsolescence, depletion | 76,088 | 71,805 |
| For taxes | 73,557 | 83,135 |
| For interest, principally on long term debt | 12,362 | 12,049 |
| For minority interests in subsidiaries | 1,569 | 1,550 |
| | 832,718 | 810,467 |
| **Which Left as Net Income** | 67,807 | 74,765 |
| **Distributed to Shareowners as Cash Dividends** | 25,659 | 24,914 |
| **Retained for Future Growth** | $ 42,148 | $ 49,851 |
| **Per Common Share Parent Company:** | | |
| Net income | $ 2.49 | $ 2.80 |
| Cash dividends paid | 1.00 | 1.00 |
| Book value | 22.06 | 20.86 |
| **Common Shares Outstanding** | 27,195,189 | 26,696,857 |

The above summary includes the operating results of Monsanto Chemical Company and all of its subsidiary companies, including The Chemstrand Corporation and its subsidiaries.

# TO THE SHAREOWNERS

Moving in step with the national economy, Monsanto's consolidated sales and earnings failed to live up to expectations during the first year of the so-called "soaring sixties."

Despite an increase in sales approximating two per cent, earnings fell 9.3 per cent, as indicated by the summary on the preceding page. The drop in income was the result of declining selling prices, increased operating expenses, and higher raw material and labor costs.

Our earnings were $2.49 a share in 1960 and $2.80 a share in 1959, based on 27,195,189 shares at the end of 1960 and 26,696,857 shares at the close of 1959, including for both years the 3,540,000 shares issued to American Viscose Corporation for its 50 per cent equity in The Chemstrand Corporation.

Sales, income and per share earnings referred to above are those for Monsanto consolidated with all its subsidiaries, including Chemstrand.

Our acquisition of total equity in Chemstrand is of far-reaching significance. The agreement under which Monsanto increased its ownership of Chemstrand from 50 to 100 per cent was approved by Monsanto and Viscose shareowners at separate, special meetings on January 16, 1961. In this connection, we should like to express our gratitude to those Monsanto shareowners who sent in their proxy votes. More than 76 per cent of our outstanding shares were represented at the special meeting; of these, more than 99 per cent were cast in favor of the agreement.

For several years, in order to reflect the total interests of Monsanto shareowners, we have been including in our Annual Reports, in addition to certified financial statements, a supplementary presentation which combined the assets, liabilities and income for the parent company, its subsidiaries, and its proportionate share of our 50 per cent-owned associated companies.

The significance of our interests in associated companies, relative to Monsanto's total interests, has been greatly reduced through acquisition of full ownership of Chemstrand. Consequently, the supplementary presentation is being discontinued, and the extent of our interest in the net worth and income of such remaining associated companies is indicated in the Financial Review, which begins on page 20. Also described in this section is the basis of consolidation.

Apart from the problems brought on by a stalled economy, lower selling prices on some of our products were brought about by new competitive pressures. Although we built additional and important economies into our manufacturing operations, the savings were not enough to offset the price declines.

Foreign imports continued to harass us, harmfully influencing both sales volumes and prices. We are apprehensive of the cumulative effect of this malady, not only on our operations, but also on those of many customers.

Furthermore, the costs of conducting necessary research, marketing our products and administering the company's activities continued to rise. Also in 1960, some key raw materials, notably naphthalene, were in relatively short supply. The situation became so acute that we had to allocate some of the products

we make from naphthalene, in some cases at levels less than 50 per cent of demand.

Specific areas of Monsanto's 1960 activities are reviewed in subsequent sections of this letter.

## CAPITAL INVESTMENT

The year's capital expenditures for new plant and equipment were considerably higher than those of 1959. For Monsanto and consolidated subsidiaries, including Chemstrand, they totaled $121,253,000, compared to 1959 expenditures of $76,252,000. Major 1960 disbursements covered projects discussed elsewhere in this report.

During the 12-month period, a total of $9,723,000 was invested in or advanced to our 50 per cent-owned associated companies and to affiliated companies in which our ownership is less than 50 per cent.

## AGRICULTURAL CHEMICALS

To strengthen our position in the expanding market for agricultural chemicals, we created a new operating division in September. In doing so, we consolidated responsibility for all research, development, manufacturing and marketing activities relating to farm chemicals. Formerly, such responsibility was shared by two other divisions.

Our new Agricultural Chemicals Division has its headquarters and research laboratories at the General Offices location in St. Louis County. From the Inorganic Chemicals Division, it acquired plants at El Dorado, Ark., and Luling, La. It took over other production units in plants of the Organic Chemicals Division at Anniston, Ala., Nitro, W. Va., and Monsanto, Ill. Additionally, a new 500-acre experimental farm is being readied at St. Charles, Mo.

### Fertilizer Materials

Sales of ammonium nitrate climbed to a new peak. Urea sales doubled. Product improvements in 1960 contributed to both gains. Pressure from low-priced imports, especially urea, presents a growing problem.

Anhydrous ammonia improved its position and we added to our capacity. New field stations for ammonia distribution were installed in several areas. Industry use of this fertilizer for direct application to the soil has been expanding at an average annual rate of about 11 per cent.

### Pesticides

Although sales rose, intensified competition lowered prices and reduced profit margins.

Sales of our broadleaf-weed killers and brush-control compounds, 2,4-D and 2,4,5-T, also reached new high levels. Because of the increased demand, construction of a new manufacturing unit for the esters of these products was begun at Monsanto, Ill. It is scheduled for start-up early in 1961 and it will incorporate new manufacturing efficiencies.

Sales of the *Randox* compounds, which give farmers effective control of broadleaf and grassy weeds in corn, increased almost threefold over those of the previous year. New *Randox* T considerably reduces the farmer's workload by eliminating rotary hoeing and all but two cultivations of his field.

Sales of *Vegadex*, a killer of costly, grassy weeds in vegetable crops, turned upward. The herbicide was introduced in new, easy-to-use, granular form in 1960 and now has application in more than 35 crops. An expansion at Nitro doubled our *Vegadex* capacity.

After a full year of demonstrating its effectiveness against wild oat infestations in Canadian flax fields, our *Avadex* herbicide was cleared by the Canadian Department of Agriculture for use with five additional crops: barley, sugar beets, rapeseed, peas and sunflower. Late in the year, the U. S. Department of Agriculture cleared *Avadex* for use with wheat, flax, sugar beets, peas and barley. In 1961, the compound

will help check wild oat in the U.S., where the weed infests about 21 million farm acres.

Our parathion and methyl parathion insect killers moved well. Combined demand for them has increased more than 50 per cent since 1958. Capacity of the Anniston facility at which the two broad-spectrum insecticides are produced was raised 50 per cent in 1960.

*Stop Scald*, a new product to protect apples from discoloration and softening during storage, was introduced to the nation's apple growers in time for the 1960 harvest.

### Feed Supplements

Sales of feed additives rose above past levels.

A new unit at Nitro added 50 per cent to our capacity for *MHA*, a protein supplement for animal feeds. Also under construction at Nitro is new capacity for *Santoquin*, an antioxidant that preserves the nutritive value of feeds and dehydrated forage. Since the start of 1961, *Santoquin* has been approved for use in feed formulations for four-legged animals, thus enlarging the market.

A new feed-grade urea was marketed to feed formulators as a low-cost, concentrated source of protein. Micro-prilled and free-flowing, it includes easy mixing among its advantages.

### Blasting Agents

The Agricultural Chemicals Division also markets ammonium nitrate as an ingredient of nitro-carbo-nitrate blasting agents. Sales for this application rose 25 per cent.

## INORGANIC CHEMICALS

### Phosphorus and Phosphates

Demand for phosphorus chemicals continued to grow. Sales in all areas exceeded previous records.

Phosphorus production reached a new high level. Modernization and expansion of phosphorus facilities at Monsanto, Tenn., were near completion as the year closed.

Phosphoric acid capacity was enlarged at Kearny, N. J., where newly developed Monsanto technology is being used. Facilities were expanded at Carondelet, Mo., to supply a growing market for calcium phosphate. A phosphoric acid plant was installed at Addyston, Ohio, to serve a large market in that area.

New developments which became commercial in 1960 include an increased-assay, light-density sodium tripolyphosphate (STP) for detergent formulation; new applications of STP in secondary recovery of oil from wells; use of STP in the improvement of copper-ore beneficiation; and advances in the field of leavening agents.

### Detergents

Sales of surface-active agents as a group were below 1959 levels. However, sales of alkyl benzene were higher and greater capacity for this product was available in the third quarter at Monsanto, Ill. The enlarged facilities are producing new and improved quality benzene-based surfactants developed in our laboratories.

Late in the year, a unit to produce new highly active detergent ingredients (ethoxylated alkyl phenols) was put on stream at Kearny. It utilizes advanced process, design and construction technology.

Our chlorine carriers for dry bleaches, sanitation agents, scouring powders and swimming-pool chlorinating agents made headway. Two new ones, *ACL* 59 and *ACL* 60, became available in commercial quantity from expanded facilities at Everett, Mass. These derivatives of trichlorocyanuric acid are being received well by our customers.

### Heavy Chemicals

Sales of this group of products declined.

The number of sulfuric acid plants designed by Monsanto for other producers increased. Two-thirds of U.S. contact-process sulfuric acid is made in Monsanto-designed units or in units using our catalyst. More than 40 per cent of the free world's contact-process sulfuric acid now is made in such units.

### Chemicals for the Electronics Industry

The plant at St. Charles, Mo., began producing ultra-pure silicon metal early in the year. Production is increasing. We are making material of high quality.

Commercial quantities of other semiconductor materials were introduced. Most important of these are indium and gallium arsenides. Demand from the electronics industry for these, and for silicon, has been encouraging.

## ORGANIC CHEMICALS

Sales of organic chemicals as a whole were up slightly despite a year-long shortage of naphthalene, one of our principal raw materials. Our main source of naphthalene is the steel industry, which was strike-bound in much of 1959 and operated far below capacity during 1960.

We use naphthalene to make phthalic anhydride and, from it, plasticizers and resin materials. Eventually, we expect to have supplementary supplies of the raw material from petroleum sources and, in fact, intend to produce it ourselves later. Meanwhile, the shortage continues to be a problem.

Selling prices were increased on a number of organics. Among them were phthalic anhydride, plasticizers, phenol, paranitroaniline, salicylic acid and aspirin. But prices were lower on some other organics, including maleic anhydride and fumaric acid.

### Functional Fluids and Petroleum Additives

Sales were above those of 1959. Fire-resistant fluids for aircraft hydraulic systems and dielectric fluids (used mainly in transformers and capacitors) achieved record high sales. Additives for oils gained but those for gasoline were down.

Our coolant-dielectric fluids progressed well in the electronics industry, where their primary use is in miniaturized equipment for the military.

### Intermediates

These industrial chemical "building blocks" for a wide variety of chemical end products fell short of their 1959 sales performance.

Our plans to install new phenol capacity were announced. Modernization of existing phenol facilities continued at Monsanto, Ill., and rehabilitation of several other units for intermediates production was begun.

### Paper Chemicals and Wood Preservatives

*Mersize*, a chemically-fortified rosin size which gives water-resistance to paper and paper board, attained new high sales levels. With government stocks of gum rosin depleted, we were fortunate to have our own sources of raw material: the Nitro, W. Va., tall-oil refinery (operated jointly with Emery Industries, Inc.) and our Filtered Rosin Products subsidiary.

Sales of pentachlorophenol wood preservative dipped, reflecting a slowdown in utilities and railroads which use the product in poles, crossarms and railroad ties.

### Pharmaceuticals, Flavors and Condiments

Sales for the group were slightly below those for 1959. This was one of the Monsanto product groups for which low-priced imports continued to create a problem.

The capacity of our St. Louis aspirin unit was increased 25 per cent. Additionally, construction was begun on a new unit at Monsanto, Ill., to double our present capacity for *Santophen* 1, now an

important hospital germicide in the battle with *Staphylococcus aureous.*

### Plasticizers

The market for these materials, which impart flexibility to vinyl plastics, was artificially depressed by a year-long shortage of phthalic anhydride starting material, as mentioned previously.

We began making *Santicizer* 409, a permanent plasticizer based on adipic acid, at Everett, Mass. And new facilities for phthalate ester manufacture are expected to be on stream at Long Beach, Calif., in mid-1961.

*Santicizer* 160, an important phthalate ester, held its big market as a plasticizer for vinyl flooring. We are building new facilities to make this product at our plant site on the Delaware River near Camden, N.J., which will almost double our total capacity for the plasticizer.

Four new plasticizers were introduced to the trade during the year.

### Resin Materials

Sales of resin materials also suffered because of the naphthalene shortage. Although we used orthoxylene as a substitute raw material to make some phthalic anhydride, it increased our costs.

We now have two phthalic anhydride units. Our third, which is to come on stream at the Delaware River site early in 1962, will add 30 per cent to present capacity.

A national shortage of maleic anhydride was eased in July when we completed a 50 per cent expansion of our St. Louis production unit.

### Rubber Additives

After a strong first quarter, sales dipped as the automotive industry slowed and tire companies began working off stocks. For the year, sales were down.

## PETROLEUM OPERATIONS

Because of domestic restrictions on the allowable production of crude oil, our production of crude was down slightly—to 8,554,000 barrels for the year. Yet, sales of our petroleum products were up.

For the past two years a large portion of our exploration efforts has been directed toward the search for natural gas in the Texas-Gulf Coast region to make new reserves available for our operations there. These efforts are beginning to be fruitful. In 1960, production of natural gas showed a gain of four per cent.

In 1960, we participated in the completion of 37 producing wells, representing to Monsanto a net interest of 22.7 wells. Of 10 gross wildcat discoveries, two yielded oil; eight yielded gas. One oil discovery was in Texas; one was in Oklahoma. Six gas discoveries were made in Texas, one in Wyoming, and one in Alberta, Canada.

Exploration expenditures for 1960 amounted to $10,471,000, a decrease of $904,000 from those for 1959.

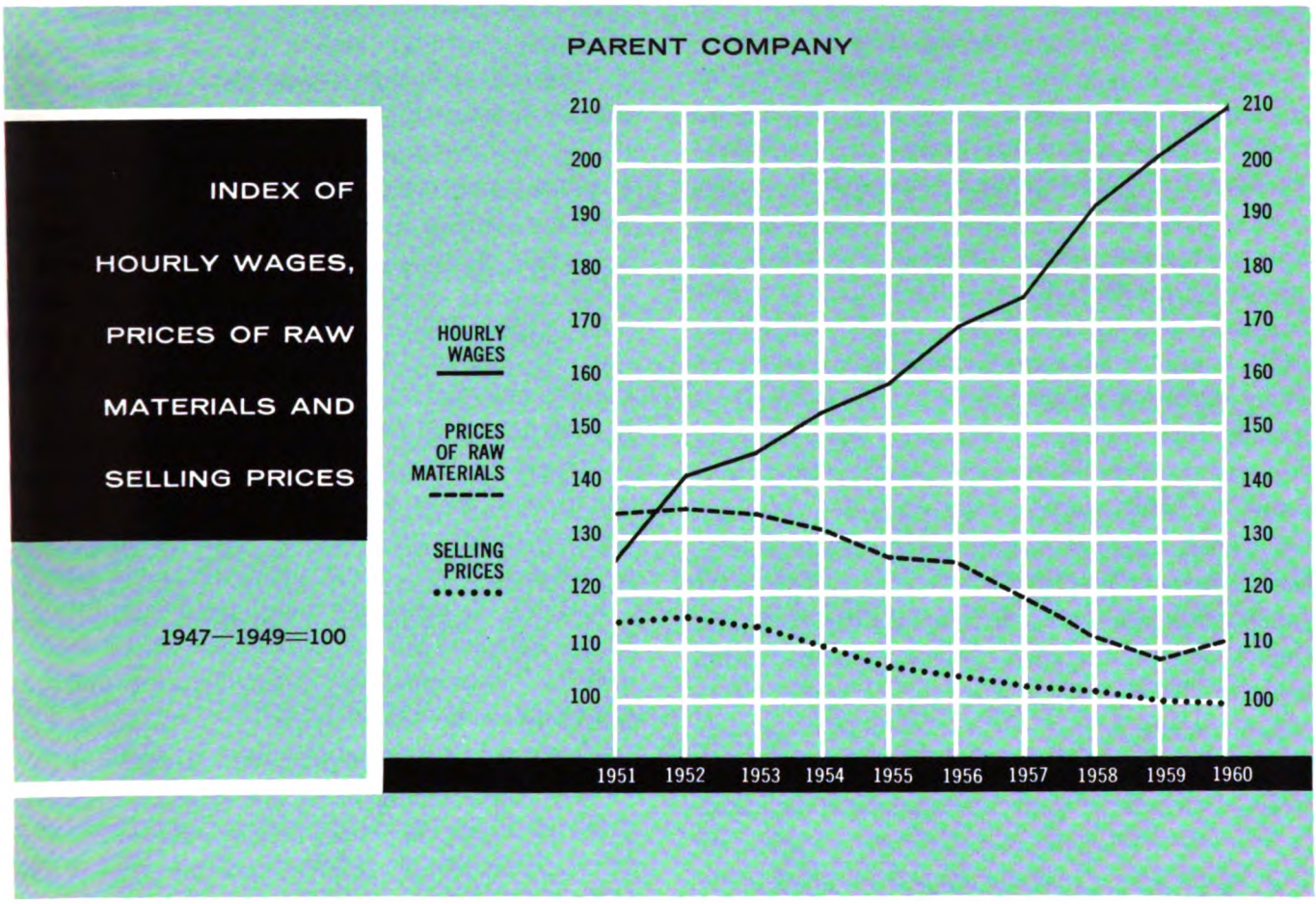
Final tie-in of new equipment at our expanded and modernized El Dorado, Ark., refinery occurred in January, increasing throughput capacity to 34,000 barrels of crude oil daily.

New products included an asphalt adhesive for bonding wood to concrete, and a flame-resistant asphalt coating to protect metal and other surfaces from corrosion.

During the year, we installed a unit to recover sulfur from hydrogen sulfide in the refinery's fuel gas. Annually, we expect to recover about 11 million pounds of elemental sulfur for use in our manufacture of sulfuric acid.

## PLASTICS

Although we increased our participation in plastics industry sales and achieved many manufacturing




economies, we could not offset the income decrease caused by sagging prices and higher raw material costs.

Lower prices resulted mainly from intense competition in certain areas of the plastics market by more and larger producers. Many producers had increased their outputs in anticipation that 1959's sharp growth rate would continue—a situation which did not develop.

Among our most promising achievements in 1960 was the development of a new family of styrene-based molding and extrusion materials. Designated *Lustran*, they have exceptional rigidity, toughness, tensile strength, chemical resistance, abrasion resistance and thermal stability. We expect their uses to range from disposable containers to one-piece refrigerator interiors. Manufacturing facilities for 50 million pounds of *Lustran* materials are being built at Addyston, Ohio, and until full production is reached there, commercial quantities are available from interim facilities at Springfield, Mass.

Other new or improved plastics products introduced in 1960 were: an improved vinyl chloride for jacketing building wire; a vinyl plastisol resin for

flooring, slush molding and metal coating; a high-impact, light-stable styrene for light-fixture components; two high-clarity polyethylene resins for making packaging films; an improved coating for paperboard cups and containers; a fire-resistant phenolic varnish for printed electrical circuits; *Santofome*, a foamed polystyrene sheet, which is competitive with paper in a number of packaging and specialty printing applications; and high-temperature-resisting phenolic resins for missile components.

Demand for high-pressure polyethylene increased and we enlarged the capacity of our production facilities at Texas City, Tex. Also involved in sales increases were thermal insulation bonding resins and latices for paint bases.

Progress was made in broadening the market for *Saflex*, our polyvinyl butyral interlayer for laminated safety glass. Industrial and architectural uses for such glass were advanced by the significant finding that it acts as an "invisible barrier" to cut down sound transmission.

Our research and engineering staffs succeeded in raising capacities at several plants, making their operations more economical at the same time. Styrene monomer, vinyl monomer and polyvinyl chloride were among the products affected.

Our leadership in the bulk shipping of plastics was strengthened by the acquisition of a large fleet of specially designed railroad cars and the installation of new bulk loading facilities at Springfield and Texas City.

The "Plasti-Lok" plastic packaging machinery and fabrication licensing program, designed to open volume markets for "Polyflex" film in the folding box industry, moved ahead appreciably with the licensing of six major carton companies representing 20 per cent of the folding-carton industry. "Polyflex" oriented polystyrene sheet is manufactured from our *Lustrex* molding materials by Plax Corporation, a Monsanto associate.

In March, an engineering development center was commissioned at Springfield for the purpose of exploring new equipment systems for foam and film-forming, compounding and other processing methods.

## THE CHEMSTRAND CORPORATION

Since its organization in 1949, Chemstrand has grown rapidly and become an important member of the U.S. chemical fiber industry—an industry which in 1959 accounted for more than 27 per cent of the nation's 6.8 billion-pound fiber production. Chemstrand now ranks as the nation's second largest producer of both nylon and acrylic fiber. The latter is marketed under Chemstrand's *Acrilan* trademark.

In 1960, Chemstrand's consolidated sales totaled $204.4 millions—3.3 per cent above 1959's $197.9 millions. Net income was $24.2 millions for 1960 and $24.1 millions for 1959.

Chemstrand continued to bolster its position in a number of substantial end uses. They include: for nylon—tire cord, home furnishings and textiles; and for *Acrilan*—carpets, blankets and a broadening range of apparel.

Chemstrand presently operates three U.S. plants and has a wholly owned subsidiary making *Acrilan* at Coleraine, Northern Ireland. It also holds important minority interests in acrylic fiber-producing companies in Italy and Japan, which use Chemstrand processes.

In 1960, additional nylon capacity came on stream at Greenwood, S. C. The new plant, which spins filament yarn in textile deniers, is strategically located in the heart of one of the nation's busiest textile-manufacturing areas. Expansions are under way at both Pensacola, Fla., Chemstrand's original nylon facility, and the new Greenwood installation.

Also in 1960, Chemstrand formed a new subsidiary, Chemstrand Research Center, Inc. Its laboratories near Durham, N. C., were occupied in August.

During the year, Chemstrand introduced a nylon tire yarn with increased fatigue resistance; a solution-dyed acrylic fiber for men's half-hose, deep-pile fabrics and woven goods; nylon textured filament yarns, which give carpets greater bulk and more pleasing feel; and nylon multilobal filament yarns which impart a silk-like feel and appearance to upholstery materials, draperies and apparel.

Chemstrand's principal products are fibers made from chemical polymers. And since Monsanto has great experience in polymeric chemistry, which includes the chemistry of plastics, the more intimate association of Chemstrand's research with Monsanto's should speed the development of new man-made fibers to sustain Chemstrand's growth.

## RESEARCH

The year was busy with significant new developments in products and processing methods.

In 1959, following an eight-year period in which 371 parent-company products were introduced, 201 of these products contributed more than 25 per cent of total sales for our four chemical divisions and 25 per cent of gross profits. In addition, 38 new products survived screening tests in 1960 and were sold in commercial volumes.

Also, in 1960, our parent company was granted 250 U.S. patents and 230 foreign patents. We believe that many cover technology that we shall convert to sales and earnings in the years ahead.

Our expenditures for research, development, patent work, and basic engineering amounted to $42.7 millions in 1960. The comparable 1959 figure was $36.4 millions.

Formation of Monsanto Research Corporation, a wholly owned subsidiary to handle contract research for the U.S. government, occurred in 1960. For several years, our Research & Engineering Division conducted such research. For example, since 1943, the division operated an atomic energy facility—now Mound Laboratory at Miamisburg, Ohio—for the Atomic Energy Commission. The scope of such research has broadened in recent years and the new company was created to handle it with greater dispatch.

Monsanto Research Corporation, which has laboratories (in addition to Mound) at Dayton, Ohio, and Everett, Mass., provides government agencies with a single Monsanto research organization established for and dedicated to government service.

Although the subsidiary's research is conducted expressly for the government, we hope that the knowledge and experience gained will be of value to Monsanto in forthcoming years.

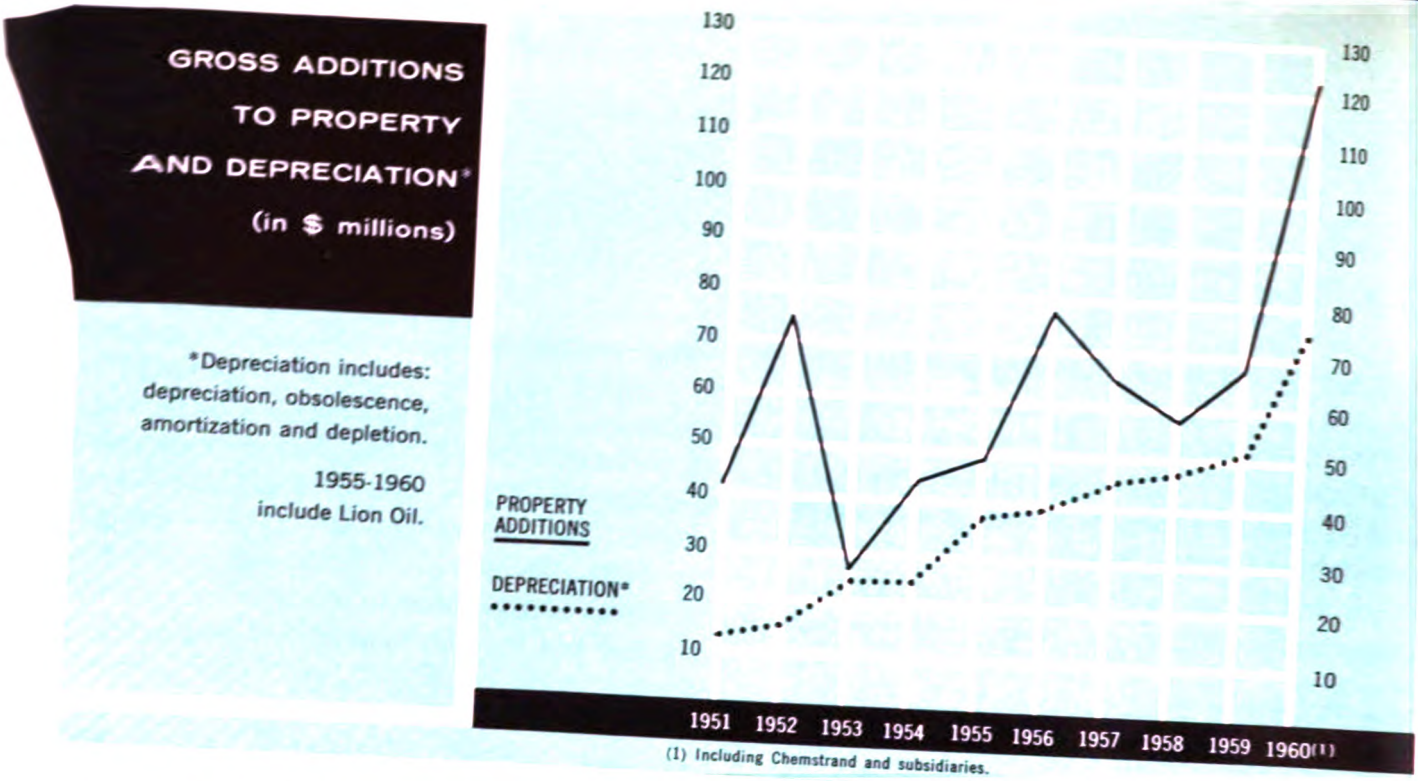
Other research developments in 1960 included increased utilization of computers to solve complex economic and technical problems quickly. Successful operation of the Luling, La., ammonia process in its first full year of computer control was evidence of our strength in this relatively new area.

Construction of our Research Center at the General Offices location in St. Louis County was well along as the year ended.

## FOREIGN OPERATIONS

Our foreign operations include our exports from the United States and the manufacturing activities of foreign companies that we own wholly or in part. We now have manufacturing interests in 11 foreign nations.

Our export sales, as well as the total sales of foreign companies in which we have interests, rose to record high levels. Generally favorable world economic




conditions helped. So did new products and substantial plant expansions in overseas areas.

### Subsidiaries

The foreign companies in which Monsanto holds equities of more than 50 per cent are referred to as subsidiaries. All subsidiaries are included in our consolidation.

Monsanto Chemicals Limited, our subsidiary in the United Kingdom in which we hold two-thirds of the equity, began operating new facilities for maleic anhydride, silicon and foamable polystyrene. These new units and other expanded operations helped lift sales above their 1959 level.

Monsanto Canada Limited (wholly owned) had sales above 1959 levels. This subsidiary had Canada's first maleic anhydride plant near completion at the close of the year.

Monsanto Chemicals (Australia) Limited, in which we have a total interest of 77 per cent, has increased its sales each year for the past five. A fluorocarbon project, launched jointly with Consolidated Zinc Pty. Limited, is to be known as Australian Fluorine Chemicals Pty. Limited. Its plant will be at Sydney.

A styrene monomer project, Australian Petrochemicals Pty. Limited (announced in 1959), is moving toward completion. Monsanto's equity in this company is 55 per cent.

Sales of Monsanto Argentina S.A.I.C., a wholly owned subsidiary, rose. The gain occurred despite the problems of starting up new units to manufacture vinyl compounds, phthalic anhydride and plasticizers.

Wholly owned Monsanto Andes S.A.I.C.—also in Argentina—began producing vinyl chloride monomer and polyvinyl chloride resin at Mendoza.

Monsanto Mexicana S.A., our 100 per cent-owned subsidiary in Mexico, had a substantial sales increase. Phosphoric acid and sodium tripolyphosphate were produced by the company for the first full year in 1960.

Our new Belgium subsidiary, Monsanto Belgium S.A., in which we hold 75 per cent of the equity, is building a plant at Ghent for production of *Saflex* polyvinyl butyral. Completion is set for mid-1961. *Saflex* is Monsanto's plastic interlayer for laminated safety glass. Such glass is used increasingly by European car manufacturers and is also used in Europe for decorative purposes.

### Associates and Affiliates

Operating results for these foreign companies, in which we have equities of 50 per cent or less, are

*not* included in our consolidation with the parent company.

Sicedison S.p.A., the Italian chemical company in which we have 40 per cent ownership, increased its sales. In 1960, new units for phenol and maleic anhydride were being built; styrene monomer and polystyrene units were being expanded.

Sales of Societe Monsanto Boussois, our 50 per cent-owned French company, reached new highs. This associate's leadership in the French polystyrene market continued.

Our 50 per cent-owned Japanese associate is Mitsubishi Monsanto Chemical Company, an important producer of polyvinyl chloride resin and polystyrene. In 1960, the two plastics found wider utility in Japanese markets. New sales records resulted and the company is adding new capacity for both products.

Monsanto Iberica S.A., our new Spanish associate, was formed in the third quarter. The firm is producing plasticizers and stabilizers for the plastics industry in its plant near Barcelona. Another plant to be built at Monzon will make calcium carbide, acetylene and acetylene derivatives. We have a 50 per cent interest in this company.

These are our principal foreign associates and affiliates. In others, not mentioned here, we have minority interests of less than 40 per cent.

## 50 PER CENT-OWNED DOMESTIC ASSOCIATED COMPANIES

Although the operations of our domestic associates no longer are consolidated with those of Monsanto and its subsidiaries, the following comment is presented for informational purposes.

**Mobay Chemical Company,** owned with Farbenfabriken Bayer A.G. of West Germany, continued as a dominant factor in urethane chemistry. Its record sales and profits resulted mainly from a steady increase in urethane foam consumption for furniture and transportation seat cushioning, industrial insulation, protective packaging, structural panels, missile components and molded parts for the automotive industry.

In May, Mobay brought on stream the nation's first commercial plant for the manufacture of polycarbonate plastic resins and, to market them, formed Mobay Products Company as its first subsidiary.

In July, Mobay's third expansion of production facilities for tolylene diisocyanate (TDI) was completed, raising annual capacity to more than 25 million pounds. A fourth expansion now under way will increase capacity to 40 million pounds annually.

In August, additional property was bought adjacent to Mobay's New Martinsville, W. Va., plant for construction of facilities to produce dinitrotoluene, a basic ingredient used in TDI manufacture. Both chemicals are essential in the manufacture of urethane foams, solid elastomers and protective coatings.

**Plax Corporation** achieved record sales and its earnings improved.

Use of Plax polyethylene bottles increased sharply. Liquid detergents, automobile polishes, rug shampoos, shoe polishes and liquid bleaches are among many products now packaged in such containers.

"Polyflex" polystyrene film also contributed to Plax's 1960 improvement. The product is used in "see-through" packaging as a film overwrap or, in heavier gauges, as fabricated boxes and containers.

Expansions in 1960 added high-speed bottle-making equipment to plants at Deep River, Conn., and Ligonier, Ind. A new plant to make polyethylene bottles at Sharonville, Ohio, is near completion and a similar plant at Anaheim, Calif., is to be in operation shortly.

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Plax has been owned with Emhart Manufacturing Company since 1957.

**Shawinigan Resin Corporation's** sales lagged those of the previous year. Sales of polyvinyl butyral, the resin from which Monsanto makes interlayer for laminated safety glass, were reduced by the slowdown in automotive production and smaller glass area in the compact cars.

Capacity for polyvinyl alcohol was doubled in the year. Development of new and improved polyvinyl acetate emulsions added new markets. And a new vinyl acetate-acrylate copolymer for adhesives was introduced successfully.

Shawinigan is owned with Shawinigan Chemicals Limited of Canada.

**Fome-Cor Corporation** continued past efforts toward development of new markets.

The associate is owned with St. Regis Paper Company. Its product — "Fomecor" — is a lightweight laminated board made by sandwiching polystyrene foam between layers of kraft paper. Because of its cushioning and insulating properties, "Fomecor" has attracted interest as a display material and as a packaging material for shipping wet and frozen products. It also is being tested for fabrication of interior trim in automobiles.

## CHOCOLATE BAYOU PROJECT

Prominent among 1960's developments was our decision to establish a major plant site at Chocolate Bayou, Tex., and thus to continue a long-range move toward self-sufficiency in hydrocarbon raw materials —a move that began in 1955 with the acquisition of Lion Oil Company.

During the year, we enlarged our Chocolate Bayou study group and undertook basic engineering studies. And on January 3, 1961, we purchased 3,000 acres, where the hydrocarbons plant is now being built.

Hydrocarbons are chemical compounds containing principally hydrogen and carbon. We use them as starting points in the manufacture of many chemicals and plastics.

Located in Brazoria County near Alvin, Tex., and scheduled for late 1962 start-up, the new plant annually will produce more than 500 million pounds of ethylene and significant quantities of other important hydrocarbons. A major portion of its products will be fed to other Monsanto plants as raw materials.

Besides ethylene, the plant annually will make 42 million gallons of benzene and more than 50 million pounds of naphthalene, two of our most important raw materials. The plant also will produce propylene, cumene, phenol, acetone, ethyl benzene and other hydrocarbons we use as raw materials.

The Chocolate Bayou location was selected because of the availability of feedstocks and water transportation and because of its proximity to Texas City (25 miles away) where a major portion of the ethylene output will be consumed.

Natural gas from our nearby field will be piped to the new plant for fuel. Some of our existing reserves will help supply its raw materials and we contemplate some such reserves might be exchanged for raw materials. As we continue to bring in additional oil and gas reserves, our basic position over the years will be enhanced further.

## PERSONNEL

Our relations with employes continued to be favorable. Work contracts were renegotiated or extended at nine plants without loss of wages or manhours. Eight of the agreements were for two years or more. Deferred wage adjustments went into effect for employes at other plants where long-term contracts had been negotiated previously.

In 1960, we achieved the best safety performance in our history. Our accident frequency rate of 0.61 (disabling injuries per million man-hours worked) was appreciably lower than the previous record of 0.69 established in 1958. Our people worked five-and-one-half times more safely than the chemical industry average. Apart from their obvious contributions to the welfare of personnel, Monsanto's safety programs have helped hold down its insurance premiums. If our accident rates were no better than average, we estimate our annual premium would be higher by more than one million dollars.

Innovations and modifications were made to increase certain benefits in our pension and group insurance plans for salaried employes and non-union hourly employes. Five-year pension and group insurance contract revisions were negotiated with unions representing hourly employes at 15 plants.

Eligible salaried and hourly employes were offered three-year options on 450,000 shares of common stock at 95 per cent of the average market price on specified dates. The plan, our second of this type, was authorized by shareowners in March. In June and December, more than 10,000 eligible employes joined and accepted options on approximately 99 per cent of the available shares.

Three former board members who retired in 1959 died in 1960. They were T. H. Barton, Charles S. Cheston and Francis J. Curtis.

A former president and board chairman of Lion Oil Company, Colonel Barton served Monsanto as a director and a member of the Finance Committee from 1955 until his retirement. He was a distinguished associate and one whom we miss.

Mr. Cheston had been a director for 14 years and chairman of the Finance Committee for 13 years. We long shall remember him for his wisdom in financial matters and for the valuable assistance he gave our company.

Mr. Curtis, who had been with Monsanto for 44 years, retired as vice president for personnel after serving as a director since 1949. His contributions in the area of personnel relations were many. He was an honorable colleague who clearly left his mark on Monsanto.

In September, Trueman M. Martin left our board after reaching retirement age. He had served as a director and vice president of the company since 1955. In these capacities and as president of the Lion Oil Company, he served with distinction.

At our Annual Meeting in March, Edgar M. Queeny announced that he would not stand for re-election as board chairman, a position he had held since 1943. He cited a policy the board adopted in 1955, under which a Monsanto president, no later than when he reaches age 60, moves to board chairmanship.

Thus, the policy was implemented. And the board elected the signers of this letter to their present positions.

We are fortunate, indeed, that Mr. Queeny accepted re-election as a director and as chairman of the Finance Committee and that he continues to serve on the Executive Committee.

The board also elected to its membership four new directors. We believe they will make important contributions to the company. They are Dillon Anderson and J. L. Christian, both elected in 1960, and Fredrick M. Eaton and Edward A. O'Neal Jr., both elected in January, 1961. Mr. Christian also was elected to the Executive Committee; Mr. Eaton was elected to the Finance Committee.

Mr. Anderson, a partner in the Houston law firm of Baker, Botts, Andrews & Shepherd, has served as President Eisenhower's special assistant for national security affairs and as a U.S. delegate to the 1955 Summit Conference at Geneva. He is chairman of

the board of the Texas National Bank of Houston and a director of Westinghouse Electric Corporation, Federated Department Stores, Inc., and Houston Transit Company.

Mr. Christian, a Monsanto vice president since 1954, had been general manager of the Inorganic Chemicals Division and its predecessor Phosphate Division since 1948.

Mr. Eaton returned to our board after an absence of one year, during which he served as chairman of the U.S. delegation to the 10-nation disarmament committee at Geneva. Originally elected a Monsanto director in 1947, he is a partner in the New York law firm of Shearman & Sterling & Wright and a director of several large corporations.

Mr. O'Neal has been president of The Chemstrand Corporation since 1956, prior to which he was with Monsanto as a board member, company vice president and general manager of the Overseas Division. He also was chairman of the board and managing director of Monsanto Chemicals Limited in London.

Election of three new vice presidents occurred in 1960. They are Edward J. Bock, who succeeded Mr. Christian as general manager of the Inorganic Chemicals Division; Tom K. Smith Jr., who became general manager of the new Agricultural Chemicals Division; and Erwin G. Somogyi, who was appointed general manager of the Research & Engineering Division, succeeding Howard K. Nason. Mr. Nason was elected president of our new subsidiary, Monsanto Research Corporation.

Photographs of our directors start on page 30. With many others, these men share the great challenge—but equally great opportunity—of lifting our company to new levels of achievement.

Supporting this endeavor are 35,427 employes throughout the free world. U.S. employes alone number 28,031. We are proud and appreciative of these men and women of Monsanto, whose great talent and loyalty are credits to the company and to themselves. The achievements recorded on these pages are clearly the fruits of their toil. And it is they who will provide the underlying thrust to keep us moving forward.

Sincerely,

Charles Allen Thomas

*Chairman of the Board*

Edgar H. Sommer

*President*

February 20, 1961
St. Louis, Missouri

## PARENT COMPANY AND ALL SUBSIDIARIES (INCLUDING CHEMSTRAND)

### SALES BY PRODUCT GROUPS

| | 1960 % | 1959 % | 1955 % |
|---|---|---|---|
| Chemical Fibers | 23.6 | 23.3 | 16.5 |
| Plastics, Synthetic Resins and Surface Coatings | 21.7 | 21.5 | 21.9 |
| Phosphate Products and Detergents | 12.0 | 12.3 | 15.0 |
| Intermediates and Plasticizers | 11.2 | 11.6 | 12.0 |
| Rubber and Oil Chemicals | 8.3 | 8.1 | 9.4 |
| Petroleum Products—Net of purchases | 6.6 | 6.6 | 7.1 |
| Agricultural Chemicals | 6.3 | 5.8 | 7.4 |
| Pharmaceuticals, Flavors and Condiments | 3.6 | 4.0 | 4.2 |
| Textile and Paper Chemicals | 3.5 | 3.5 | 2.1 |
| Heavy Chemicals | 2.9 | 3.1 | 3.8 |
| Other | .3 | .2 | .6 |
| | 100.0 | 100.0 | 100.0 |

## PARENT COMPANY

### SALES TO PUBLIC AND CONSUMING INDUSTRIES

| | 1960 | | 1959 | | 1958 | |
|---|---|---|---|---|---|---|
| | Position | % of Total | Position | % of Total | Position | % of Total |
| Soap and Detergent | 1 | 12.03 | 1 | 12.75 | 1 | 13.24 |
| Agriculture | 2 | 11.85 | 2 | 11.46 | 3 | 10.02 |
| Petroleum | 3 | 10.91 | 4 | 9.88 | 2 | 11.53 |
| Plastics and Resins | 4 | 9.57 | 3 | 10.03 | 4 | 9.70 |
| Rubber | 5 | 8.81 | 5 | 8.94 | 5 | 7.92 |
| Metal | 6 | 5.63 | 7 | 6.07 | 7 | 5.77 |
| Textile | 7 | 5.62 | 6 | 6.54 | 6 | 6.00 |
| Paper and Printing | 8 | 5.57 | 9 | 4.96 | 9 | 4.80 |
| Stone, Glass and Vitreous Product | 9 | 5.32 | 8 | 6.00 | 11 | 4.65 |
| Public-Service Station Sales, etc. | 10 | 4.58 | 10 | 4.35 | 8 | 4.98 |
| Paint, Varnish and Printing Ink | 11 | 4.20 | 11 | 4.01 | 10 | 4.66 |
| Pharmaceutical | 12 | 3.03 | 12 | 2.72 | 12 | 3.49 |
| Food | 13 | 2.61 | 13 | 2.50 | 13 | 3.04 |
| Lumber and Timber | 14 | 2.09 | 14 | 2.31 | 14 | 2.53 |
| Iron, Steel and Related Product | 15 | 1.59 | 17 | 1.28 | 16 | 1.38 |
| Transportation Equipment | 16 | 1.30 | 16 | 1.32 | 17 | .87 |
| Color and Dyestuff | 17 | 1.28 | 15 | 1.58 | 15 | 1.76 |
| Non-ferrous Metal | 18 | .74 | 18 | .56 | 18 | .73 |
| Other | | 3.27 | | 2.74 | | 2.93 |
| | | 100.00 | | 100.00 | | 100.00 |

# STATEMENT OF CONSOLIDATED FINANCIAL POSITIO

## ASSETS

| | 1960 | 1959 |
|---|---|---|
| **Current Assets:** | *(In Thousands)* | |
| Cash | $ 32,757 | $ 34,017 |
| Marketable securities, at cost which is less than market | 75,110 | 122,267 |
| Net receivables | 124,425 | 120,388 |
| Inventories | 153,479 | 132,064 |
| | 385,771 | 408,736 |
| **Investments and Miscellaneous Assets, at Cost or Less:** | | |
| Investment in and advances to associates | 27,789 | 25,558 |
| Miscellaneous investments and receivables | 47,646 | 37,199 |
| | 75,435 | 62,757 |
| **Property, Plant and Equipment, at Cost** | 1,092,323 | 992,723 |
| Less accumulated depreciation and depletion | 476,621 | 416,931 |
| Net property | 615,702 | 575,792 |
| **Deferred Charges** | 12,737 | 11,920 |
| | $1,089,645 | $1,059,205 |

The above statement should be read in conjunction with pages 5 report.

# ND SUBSIDIARIES

## T DECEMBER 31, 1960 AND 1959

### LIABILITIES

| | 1960 | 1959 |
|---|---|---|
| | *(In Thousands)* | |
| **Current Liabilities:** | | |
| Accounts payable and accruals | $ 86,477 | $ 79,185 |
| Income taxes | 46,777 | 53,570 |
| Sinking fund payments, less $1,000,000 debentures in treasury | 9,820 | 12,346 |
| | 143,074 | 145,101 |
| **Debentures, Bonds, etc.—Less Current Portion Above** | 148,239 | 158,154 |
| **Income Debentures** | 141,000 | 141,000 |
| **Other Liabilities:** | | |
| Deferred income taxes | 31,138 | 33,573 |
| Miscellaneous | 3,117 | 3,044 |
| | 34,255 | 36,617 |
| **Minority Interests in Subsidiary Companies** | 23,114 | 21,561 |
| **Shareowners' Equity:** | | |
| Common shares—authorized, 35,000,000 shares, par value $2 each; outstanding, 27,195,189 shares in 1960 and 26,696,857 shares in 1959 | 54,390 | 53,394 |
| Paid-in surplus | 286,666 | 230,517 |
| Retained earnings | 258,907 | 272,861 |
| | 599,963 | 556,772 |
| | $1,089,645 | $1,059,205 |

# STATEMENT OF CONSOLIDATED INCOME

| | 1960 | 1959 | Increase *Decrease* |
|---|---|---|---|
| | | *(In Thousands)* | |
| **Income:** | | | |
| Net sales | $890,114 | $875,012 | $15,102 |
| Other | 10,411 | 10,220 | 191 |
| | 900,525 | 885,232 | 15,293 |
| **Deductions:** | | | |
| Cost of goods sold | 636,371 | 614,439 | 21,932 |
| Selling, administrative and research expenses | 122,689 | 110,065 | 12,624 |
| Interest | 12,362 | 12,049 | 313 |
| Minority interests | 1,569 | 1,550 | 19 |
| Other | 934 | 2,320 | *1,386* |
| | 773,925 | 740,423 | 33,502 |
| **Income Before Income Taxes** | 126,600 | 144,809 | *18,209* |
| **Provision for Income Taxes:** | | | |
| Current | 58,207 | 66,443 | *8,236* |
| Deferred | 586 | 3,601 | *3,015* |
| | 58,793 | 70,044 | *11,251* |
| **Net Income** | $ 67,807 | $ 74,765 | *$ 6,958* |

The above statement should be read in conjunction with pages 20, 21 and 22 of this report.

# STATEMENT OF CONSOLIDATED PAID-IN SURPLUS AND RETAINED EARNINGS

## PAID-IN SURPLUS

| | 1960 | 1959 |
|---|---|---|
| | *(In Thousands)* | |
| **Balance at Beginning of Year** | $230,517 | $195,063 |
| **Additions:** | | |
| Excess of approximate market value of common capital stock distributed as a stock dividend over the par value thereof | 16,175 | 21,178 |
| Excess of amounts received over the par value of common capital stock issued under stock option plans | 970 | 13,006 |
| Excess of approximate market value over the par value of common capital stock issued for all of the outstanding stock of Nitro Industrial Corporation | | 1,270 |
| Adjustment resulting from an increase in the stated value of common stock of The Chemstrand Corporation (see retained earnings below) | 39,000 | |
| Other | 4 | |
| **Balance at End of Year** | $286,666 | $230,517 |

## RETAINED EARNINGS

| | | |
|---|---|---|
| **Balance at Beginning of Year** | $272,861 | $245,094 |
| **Addition—Net Income for the Year** | 67,807 | 74,765 |
| | 340,668 | 319,859 |
| **Deductions:** | | |
| Dividends on capital stock of parent company: | | |
| Cash—at the rate of $1 a share | 23,159 | 22,414 |
| Stock—2% | 17,102 | 22,084 |
| | 40,261 | 44,498 |
| Cash dividend on capital stock of The Chemstrand Corporation | 2,500 | 2,500 |
| | 42,761 | 46,998 |
| Transfer to common capital stock account by The Chemstrand Corporation resulting from an increase in the stated value of its common stock (see paid-in surplus above) | 39,000 | |
| | 81,761 | 46,998 |
| **Balance at End of Year** | $258,907 | $272,861 |

The above statement should be read in conjunction with pages 20, 21 and 22 of this report.

## FINANCIAL REVIEW

The accompanying financial statements (pages 16 through 19) consolidate with the parent company all domestic and foreign subsidiaries in which Monsanto Chemical Company owns more than 50 per cent of the voting capital stock.

On January 16, 1961, The Chemstrand Corporation became a wholly owned subsidiary of Monsanto through the exchange of 3,540,000 shares of Monsanto common stock for the entire investment of American Viscose Corporation in Chemstrand, consisting of 50 per cent of Chemstrand's outstanding common stock and 50 per cent of its subordinated notes. This transaction was treated as a pooling of interests for accounting purposes. Consequently, and because of its significance and its consummation immediately following the close of the year, the accounts of Chemstrand have been included in Monsanto's financial statements for 1960.

Effective with the year 1960, the company is presenting a consolidation of the parent with all of its domestic and foreign subsidiary companies. Previously, foreign subsidiaries, other than Canadian, had been excluded from consolidation. The accompanying financial statements for the year 1959 have been restated for comparative purposes to conform to the new presentation as well as to include the accounts of The Chemstrand Corporation.

On the former basis of consolidation, which included the parent company and its domestic and Canadian subsidiaries only, sales and net income for 1960 would have been $613,814,000 and $41,246,000, compared with $615,377,000 and $48,977,000 for 1959.

Sales and net income of The Chemstrand Corporation and subsidiaries included in the accompanying statement of consolidated income were:

| | 1960 | 1959 |
|---|---|---|
| | (In Thousands) | |
| Net sales | $204,397 | $197,925 |
| Net income | 24,156 | 24,078 |

Following are the major subsidiary companies which are included in consolidation:

The Chemstrand Corporation and subsidiaries
Monsanto Export Company
Monsanto Canada Limited and subsidiary
Monsanto Mexicana S.A.
Monsanto Overseas S.A. (Panama) and subsidiaries
Monsanto Chemicals Limited and British subsidiaries
Monsanto Chemicals (Australia) Limited and subsidiary

Comparative consolidated sales and income by quarters of the parent company and subsidiaries were:

| | 1960 | 1959 | Per Cent Increase *Decrease* |
|---|---|---|---|
| | (In Thousands) | | |
| Sales: | | | |
| First quarter | $226,295 | $217,054 | 4.3 |
| Second quarter | 234,382 | 233,277 | .5 |
| Third quarter | 218,321 | 215,150 | 1.5 |
| Fourth quarter | 211,116 | 209,531 | .8 |
| | $890,114 | $875,012 | 1.7 |
| Income: | | | |
| First quarter | $ 18,943 | $ 20,088 | *5.7* |
| Second quarter | 19,420 | 21,829 | *11.0* |
| Third quarter | 15,373 | 18,059 | *14.9* |
| Fourth quarter | 14,071 | 14,789 | *4.9* |
| | $ 67,807 | $ 74,765 | *9.3* |

| | 1960 | 1959 | |
|---|---|---|---|
| | | As Reported | Adjusted for 1960 Stock Dividend |
| Per share earnings were: | | | |
| First quarter | $ .70 | $ .75 | $ .74 |
| Second quarter | .71 | .82 | .80 |
| Third quarter | .57 | .68 | .67 |
| Fourth quarter | .51 | .55 | .54 |
| | $2.49 | $2.80 | $2.75 |

Shares outstanding December 31, including those issued in January 1961 for Chemstrand:

| | |
|---|---|
| 1960 | 27,195,189 |
| 1959 | 26,696,857 |

The equity in the unaudited 1960 net income of 50 per cent-owned companies (other than Chem-

strand) was $2,165,000, compared with $1,586,000 in 1959. Dividends of $563,000 were received from these companies in 1960 and $313,000 in 1959, which have been included in the parent's income. The equity in the unaudited net assets of such companies at the end of 1960 was $28,985,000, which exceeded the carrying value of $27,789,000 by $1,196,000.

Charges against income for depreciation, obsolescence and depletion totaled $76,088,000, of which $73,218,000 was depreciation and obsolescence, and $2,870,000 depletion of mines and wells. In 1959, such charges were $68,732,000 and $3,073,000.

The excess of depreciation provided by the sum of the years digits method over straight line depreciation increased from $10,341,000 in 1959 to $10,644,000. These amounts are equivalent after income taxes to 18½ cents a share on 26,696,857 shares in 1959 and 19 cents a share on 27,195,189 shares in 1960.

Accumulated depreciation and depletion at year end:

| | 1960 | 1959 |
|---|---|---|
| | (In Thousands) | |
| Depreciation | $449,383 | $391,341 |
| Depletion | 27,238 | 25,590 |
| Total | $476,621 | $416,931 |

Repair and maintenance charges included in operating expenses were $60,785,000 in 1960 and $54,497,000 in 1959.

Inventories are valued substantially at the lower of cost or market. Annual rates of turnover were 4.5 in 1960 and 4.8 in 1959.

Reserves for doubtful accounts were $3,081,000 in 1960 and $3,136,000 in 1959.

Debentures, bonds, etc., and income debentures were comprised of:

| | 1960 | 1959 |
|---|---|---|
| | (In Thousands) | |
| Debentures, bonds, etc.: | | |
| Parent company: | | |
| 3¼% sinking fund debentures, due 1968 | $ 12,500 | $ 13,750 |
| 2.65% debentures, due 1971 (less in treasury, $1,000,000 in 1960 and $2,000,000 in 1959) | 24,000 | 24,000 |
| 3⅝% sinking fund debentures, due 1972 | 11,500 | 12,000 |
| The Chemstrand Corporation and subsidiaries: | | |
| 4½% term loans from banks, due 1962 | 10,000 | 10,000 |
| 4½% min. term loan from bank, due 1963 | 1,907 | 2,500 |
| 3½% first mortgage bonds, due 1976 | 69,392 | 76,821 |
| Monsanto Chemicals Limited (British subsidiary): | | |
| 6% debentures, due 1977/82 | 8,400 | 8,400 |
| 5% debentures, due 1982 | 9,800 | 9,800 |
| Other subsidiaries (less $289,500 in treasury in 1960 and 1959) | 740 | 883 |
| Total | $148,239 | $158,154 |
| Income debentures—Parent company: | | |
| 3¾%, due 2002 | $ 91,000 | $ 91,000 |
| 4¼%, due 2008 | 50,000 | 50,000 |
| Total | $141,000 | $141,000 |

## FINANCIAL REVIEW *(Continued)*

The May 1, 1961 and 1962 sinking fund payments on the 2.65 per cent debentures were anticipated by the purchase in 1959 of $2 millions of these debentures.

During 1960, four quarterly cash dividends of 25 cents each were paid on the common shares. Also, a stock dividend of two per cent was paid in December.

The parent company has three stock option plans in effect: the plans authorized by shareowners in 1951 and 1960 for key employes, and the Second Employes' Stock Plan, authorized by shareowners in 1960 for hourly and salaried employes except participants in the first mentioned plans. The status of the authorized shares of each and the changes occurring during the year were:

| | 1951 Stock Option Plan | 1960 Stock Option Plan | Second Employes' Stock Plan |
|---|---|---|---|
| Outstanding 1/1/60 | 420,809 | | |
| Unoptioned 1/1/60 | 59,035 | | |
| Unoptioned shares cancelled | 59,035 | | |
| Optioned during year | | 234,000 | 445,365 |
| Exercised during year | 34,738 | | |
| Terminated during year | 3,080 | 1,000 | 21,673 |
| Outstanding 12/31/60 | 390,816* | 237,660* | 423,692 |
| Unoptioned 12/31/60 | | 119,340* | 26,308 |

*Adjusted for 1960 two per cent stock dividend.

Under the Stock Option Plans, 316 options are outstanding, at prices ranging from $26.54 to $44.98 a share. Where applicable, the prices have been adjusted for the 1955 three-for-one split and the 1955, 1956, 1957, 1959 and 1960 stock dividends of two per cent each.

The Second Employes' Stock Plan provided for the grant to hourly paid and salaried employes of options to purchase a maximum of 450,000 Monsanto shares. Three-year options thereunder were offered on June 3, 1960, the effective date of the plan, to 21,273 eligible employes. On December 5, 1960, the six months anniversary of the plan, thirty-month options were offered to 1,057 additional employes who had not previously been eligible to participate. At December 31, 1960, 9,523 employes held options, offered on June 3, to purchase a total of 411,532 shares at $39.25 a share, and 432 employes held options, offered on December 5, to purchase a total of 12,160 shares at $40.75 a share. The prices are approximately 95 per cent of the New York Stock Exchange average price on the date the options were offered. Payments by the employe over the option period are made by payroll deductions on which the company credits interest at a minimum rate of four per cent.

## ACCOUNTANTS' OPINION

HASKINS & SELLS
CERTIFIED PUBLIC ACCOUNTANTS

BOATMEN'S BANK BUILDING
SAINT LOUIS 2

Monsanto Chemical Company:

We have examined the statement of consolidated financial position of Monsanto Chemical Company and its subsidiary companies, except The Chemstrand Corporation (see Financial Review -- page 20), as of December 31, 1960 and the related statements of consolidated income and paid-in surplus and retained earnings for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances. As to The Chemstrand Corporation, we were furnished with the report of other accountants on their examination of the financial statements of that company.

In our opinion, which insofar as it relates to the amounts included for The Chemstrand Corporation is based solely upon the report of other accountants referred to above, the accompanying statement of consolidated financial position and statements of consolidated income and paid-in surplus and retained earnings present fairly the financial position of Monsanto Chemical Company and its subsidiaries at December 31, 1960 and the results of their operations for the year then ended, in conformity with generally accepted accounting principles applied, except as to the change in principles of consolidation described on page 20, which we approve, on a consistent basis.

February 6, 1961.

Haskins & Sells

# MONSANTO CHEMICAL COMPAN

## HISTORICAL STATEMENT OF CONSOLIDATE

*(In millions)*

### ASSETS

| | 1960(1) | 1959 | 1958 | 1957 | 1956 | 10 YEARS AGO 1950 | 25 YEARS AGO 1935 |
|---|---|---|---|---|---|---|---|
| **Current Assets:** | | | | | | | |
| Cash | $ 32.8 | $ 25.7 | $ 24.6 | $ 28.3 | $ 30.2 | $ 31.0 | $ 3.7 |
| Marketable securities | 75.1 | 93.3 | 38.5 | 22.7 | 17.7 | 27.5 | |
| Net receivables | 124.4 | 101.6 | 93.5 | 79.6 | 75.1 | 30.9 | 2.8 |
| Inventories | 153.5 | 105.5 | 100.4 | 108.3 | 105.0 | 33.2 | 5.1 |
| | 385.8 | 326.1 | 257.0 | 238.9 | 228.0 | 122.6 | 11.6 |
| **Investments, etc.** | 75.4 | 79.6 | 76.4 | 55.4 | 41.1 | 4.0 | 1.0 |
| **Property:** | | | | | | | |
| Land | 19.2 | 14.2 | 11.8 | 10.9 | 10.7 | 4.4 | 1.5 |
| Buildings | 181.0 | 110.4 | 107.3 | 103.0 | 94.4 | 41.5 | 5.7 |
| Machinery and equipment | 795.5 | 524.1 | 484.4 | 453.3 | 422.9 | 144.5 | 15.8 |
| Phosphate deposits | 8.1 | 6.9 | 6.2 | 6.1 | 5.9 | 2.4 | .1 |
| Producing oil and gas properties | 79.5 | 76.6 | 74.9 | 67.7 | 64.6 | | |
| Undeveloped oil and gas leaseholds | 9.0 | 10.0 | 12.8 | 19.7 | 15.1 | | |
| Accumulated depreciation, etc. | *449.4* | *307.7* | *274.3* | *238.5* | *207.6* | *70.5* | *7.8* |
| Accumulated depletion | *27.2* | *25.6* | *24.4* | *22.3* | *21.2* | *.5* | |
| Net property | 615.7 | 408.9 | 398.7 | 399.9 | 384.8 | 121.8 | 15.3 |
| **Deferred Charges** | 12.7 | 10.2 | 8.5 | 6.5 | 5.5 | 1.4 | .2 |
| | $1,089.6 | $824.8 | $740.6 | $700.7 | $659.4 | $249.8 | $28.1 |

(1) The accounts of The Chemstrand Corporation and subsidiaries are included only in the year 1960.
Italics indicate deduction.

ND SUBSIDIARIES

INANCIAL POSITION

*(In millions)*

## LIABILITIES

| | 1960(1) | 1959 | 1958 | 1957 | 1956 | 10 YEARS AGO 1950 | 25 YEARS AGO 1935 |
|---|---|---|---|---|---|---|---|
| **Current Liabilities:** | | | | | | | |
| Accounts payable and accruals | $ 86.5 | $ 65.5 | $ 63.0 | $ 61.2 | $ 55.2 | $ 23.4 | $ 2.4 |
| Income taxes less tax notes | 46.8 | 36.1 | 22.0 | 25.7 | 26.7 | 7.5 | .8 |
| Sinking fund payments | 9.8 | 1.8 | 1.8 | 1.8 | 1.8 | | |
| | 143.1 | 103.4 | 86.8 | 88.7 | 83.7 | 30.9 | 3.2 |
| **Debentures, Bonds, etc.** | 148.2 | 68.8 | 72.5 | 72.3 | 70.5 | 30.4 | |
| **Income Debentures** | 141.0 | 141.0 | 116.0 | 91.0 | 91.0 | | |
| **Other Liabilities:** | | | | | | | |
| Deferred income taxes | 31.1 | 19.0 | 19.3 | 17.5 | 13.0 | 2.5 | |
| Miscellaneous | 3.1 | 1.7 | 2.5 | 3.3 | 4.5 | 8.7 | 1.2 |
| | 34.2 | 20.7 | 21.8 | 20.8 | 17.5 | 11.2 | 1.2 |
| **Minority Interests in Subsidiaries** | 23.1 | 21.6 | 20.4 | 20.2 | 18.1 | 14.1 | 2.3 |
| **Shareowners' Equity:** | | | | | | | |
| Preference shares | | | | | | 24.5 | |
| Common shares | 54.4 | 46.3 | 44.5 | 44.4 | 42.9 | 23.5 | 10.0 |
| Paid-in surplus | 286.7 | 222.6 | 187.2 | 186.5 | 164.2 | 56.5 | 3.4 |
| Retained earnings | 258.9 | 200.4 | 191.4 | 176.8 | 171.5 | 58.7 | 8.0 |
| | 600.0 | 469.3 | 423.1 | 407.7 | 378.6 | 163.2 | 21.4 |
| | $1,089.6 | $824.8 | $740.6 | $700.7 | $659.4 | $249.8 | $28.1 |

# HISTORICAL STATEMENT OF CONSOLIDATED INCOME

*(In millions except per share earnings)*

| | 1960(1) | 1959 | 1958 | 1957 | 1956 | 10 YEARS AGO 1950 | 25 YEARS AGO 1935 |
|---|---|---|---|---|---|---|---|
| **Income:** | | | | | | | |
| Net sales | $890.1 | $688.0 | $611.3 | $624.8 | $591.2 | $248.9 | $24.7 |
| Other | 10.4 | 12.3 | 8.9 | 7.3 | 4.8 | 4.7 | .4 |
| | 900.5 | 700.3 | 620.2 | 632.1 | 596.0 | 253.6 | 25.1 |
| **Deductions:** | | | | | | | |
| Cost of goods sold | 636.3 | 512.5 | 469.1 | 468.8 | 431.1 | 169.8 | 16.5 |
| Selling, administrative, research | 122.7 | 83.4 | 75.4 | 77.7 | 81.1 | 25.1 | 3.6 |
| Interest | 12.4 | 7.5 | 7.3 | 6.0 | 5.9 | .8 | |
| Minority interests | 1.6 | 1.6 | .5 | .8 | .9 | .7 | .2 |
| Other | .9 | 1.8 | 5.1 | 6.0 | 2.9 | .9 | .3 |
| | 773.9 | 606.8 | 557.4 | 559.3 | 521.9 | 197.3 | 20.6 |
| **Income Before Income Taxes** | 126.6 | 93.5 | 62.8 | 72.8 | 74.1 | 56.3 | 4.5 |
| **Provision for Income Taxes** | 58.8 | 40.0 | 25.9 | 33.0 | 33.2 | 29.7 | .7 |
| **Net Income** | $ 67.8 | $ 53.5 | $ 36.9 | $ 39.8 | $ 40.9 | $ 26.6 | $ 3.8 |
| **Per Common Share(2)** | $ 2.49 | $ 2.31 | $ 1.66 | $ 1.79 | $ 1.90 | $ 1.81 | $ .43 |

(1) The accounts of The Chemstrand Corporation and subsidiaries are included only in the year 1960.
(2) Adjusted for splits.

D SUBSIDIARIES

## OTHER DATA

*(In millions except where italicized)*

| | 1960(1) | 1959 | 1958 | 1957 | 1956 | 10 YEARS AGO 1950 | 25 YEARS AGO 1935 |
|---|---|---|---|---|---|---|---|
| Depreciation, depletion, etc. | $ 76.1 | $ 51.7 | $ 48.9 | $ 45.5 | $ 40.9 | $ 13.4 | $ 1.3 |
| Book value a share(2) | *$22.06* | *$20.27* | *$19.01* | *$18.34* | *$17.65* | *$9.83* | *$2.38* |
| Gross additions to property | $121.3 | $ 68.7 | $ 58.1 | $ 64.8 | $ 77.1 | $ 17.9 | $ 3.7 |
| Employes(3) | *35,427* | *25,148* | *24,524* | *24,331* | *23,678* | *16,450* | *4,054* |
| Net working capital | $242.7 | $222.7 | $170.2 | $150.2 | $144.3 | $ 91.7 | $ 8.4 |
| Employed capital(4) | $912.3 | $700.7 | $632.0 | $591.2 | $558.2 | $207.7 | $ 23.7 |
| Employed capital per employe | *$25,752* | *$27,863* | *$25,771* | *$24,298* | *$23,575* | *$12,626* | *$5,846* |
| Parent company: | | | | | | | |
| Cash dividends on common shares | $ 23.2 | $ 22.4 | $ 22.2 | $ 21.5 | $ 21.0 | $ 11.8 | $ 1.4 |
| Per common share(2) | *$1.00* | *$1.00* | *$1.00* | *$1.00* | *$1.00* | *$.88* | *$.17* |
| Preference shares outstanding | | | | | | *244,820* | |
| Common shares outstanding(2) | 27.2 | 23.2 | 22.3 | 22.2 | 21.4 | 14.1 | 9.0 |
| Number of shareowners | *83,809* | *78,675* | *66,427* | *60,036* | *53,018* | *17,427* | *5,191* |

(1) Data for The Chemstrand Corporation and subsidiaries are included only in the year 1960.
(2) Adjusted for splits.
(3) Excluding employes of government plants.
(4) Net worth and long term debt.

# MONSANTO CHEMICAL COMPANY AND SUBSIDIARIES

## SOURCE AND DISPOSITION OF FUNDS

*(In Thousands)*

| | TOTAL | 1960[1] | 1959 | 1958 | 1957 | 1956 |
|---|---|---|---|---|---|---|
| **Source of Funds:** | | | | | | |
| Net income | $238,794 | $ 67,807 | $ 53,473 | $ 36,882 | $39,778 | $40,854 |
| Provisions for: | | | | | | |
| Depreciation, etc. | 263,139 | 76,088 | 51,691 | 48,884 | 45,547 | 40,929 |
| Deferred income taxes | 11,912 | 586 | 322 | 1,839 | 4,396 | 4,769 |
| Sale of securities: | | | | | | |
| 4¼% income debentures | 50,000 | | 25,000 | 25,000 | | |
| 6% debenture stock of British subsidiary | 8,400 | | | 3,780 | 4,620 | |
| Common shares issued under options | 17,115 | 1,040 | 13,846 | 872 | 558 | 799 |
| Other—net | 22,871 | 91 | 8,765 | 6,988 | 3,288 | 3,739 |
| | 612,231 | 145,612 | 153,097 | 124,245 | 98,187 | 91,090 |
| **Disposition of Funds:** | | | | | | |
| Dividends on common shares: | | | | | | |
| Monsanto | 110,300 | 23,159 | 22,414 | 22,218 | 21,517 | 20,992 |
| Chemstrand | 2,500 | 2,500 | | | | |
| | 112,800 | 25,659 | 22,414 | 22,218 | 21,517 | 20,992 |
| Plant additions and replacements | 389,900 | 121,253 | 68,657 | 58,057 | 64,820 | 77,113 |
| Investment in affiliated companies | 36,712 | 9,723 | 5,504 | 20,232 | 3,146 | *1,893* |
| Sinking fund payments | 23,284 | 9,915 | 3,999 | 3,870 | 2,750 | 2,750 |
| Increase—*decrease* in working capital[2] | 59,454 | 27,479 | *3,485* | 7,862 | 2,761 | 24,837 |
| Increase—*decrease* in cash and securities | *9,919* | *48,417* | 56,008 | 12,006 | 3,193 | *32,709* |
| | $612,231 | $145,612 | $153,097 | $124,245 | $98,187 | $91,090 |

(1) The accounts of The Chemstrand Corporation and subsidiaries are included only in the year 1960.
(2) Exclusive of cash and securities.
Italics indicate decrease.

# PETROLEUM OPERATING DATA

| | 1960 | 1959 | 1958 | 1957 | 1956 |
|---|---|---|---|---|---|
| Expenditures for Exploration | $10,470,702 | $11,374,804 | $11,765,858 | $15,647,840 | $20,175,034 |
| Portion Capitalized | $ 7,339,777 | $ 7,869,800 | $ 8,031,826 | $11,401,163 | $14,656,754 |
| Portion Expensed | $ 3,130,925 | $ 3,505,004 | $ 3,734,032 | $ 4,246,677 | $ 5,518,280 |
| Leaseholds Expired and Abandoned | $ 2,949,815 | $ 4,363,793 | $ 4,038,948 | $ 2,654,890 | $ 1,452,725 |
| Number of Producing Wells (net) | 1,171 | 1,167 | 1,157 | 1,141 | 1,098 |
| Natural Gas Produced—Net MCF(1) | 23,315,450 | 22,454,760 | 21,161,443 | 21,456,156 | 20,906,875 |
| Liquefied Pet. Gas Produced—Bbls. | 804,223 | 936,923 | 733,306 | 884,804 | 994,517 |
| Gross Crude Oil Produced—Barrels | 9,845,270 | 10,300,226 | 8,050,160 | 8,568,035 | 9,322,559 |
| Net Crude Oil Produced—Barrels | 8,553,981 | 8,927,401 | 7,103,196 | 7,502,654 | 8,163,161 |
| Average Crude Price Per Barrel(2) | $2.86 | $2.87 | $2.90 | $2.98 | $2.75 |
| Domestic Undeveloped Acreage | 639,580 | 629,463 | 1,301,657 | 2,392,507 | 2,250,591 |
| Domestic Producing Acreage | 87,572 | 83,450 | 79,203 | 78,141 | 71,800 |
| Crude Oil Run to Stills—Barrels | 11,956,667 | 10,943,015 | 10,392,687 | 10,527,774 | 8,393,703 |
| Daily Average Crude Oil Runs—Barrels | 32,668 | 29,981 | 28,473 | 28,843 | 22,934 |
| Refinery Production—Barrels | 12,784,443 | 11,758,846 | 11,375,494 | 11,347,931 | 8,943,546 |
| Station Sales—Gallons | 144,378,691 | 130,968,526 | 114,177,697 | 111,562,216 | 116,057,474 |
| Refined Oil Sales—Gallons(3) | 499,065,023 | 455,425,433 | 478,416,598 | 455,120,546 | 372,239,287 |

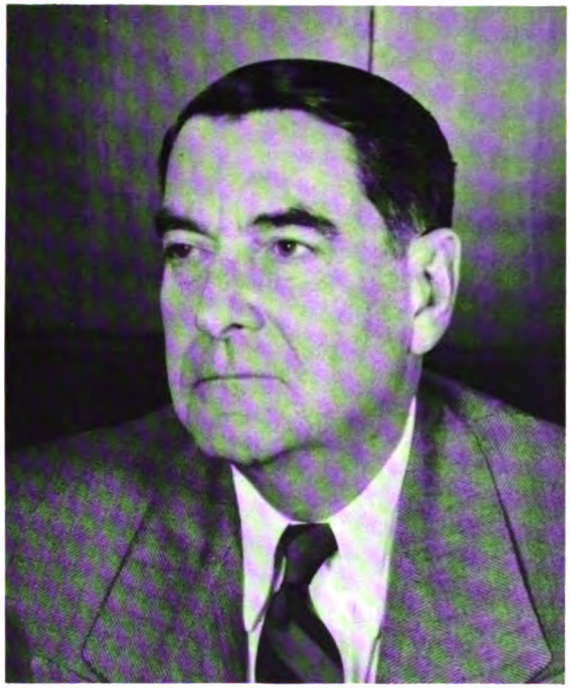
(1) Excludes gas returned to formations.
(2) At end of year.
(3) Includes station sales.

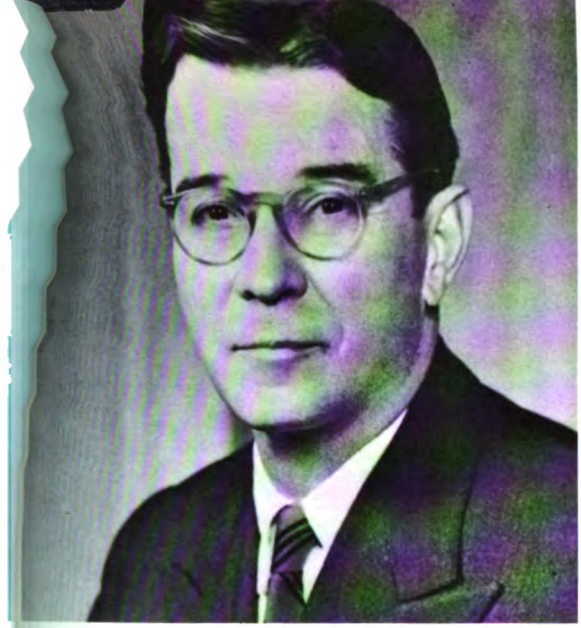
CHARLES ALLEN THOMAS
*Chairman of the Board of Directors*

CHARLES H. SOMMER
*President and Chairman of the Executive Committee*

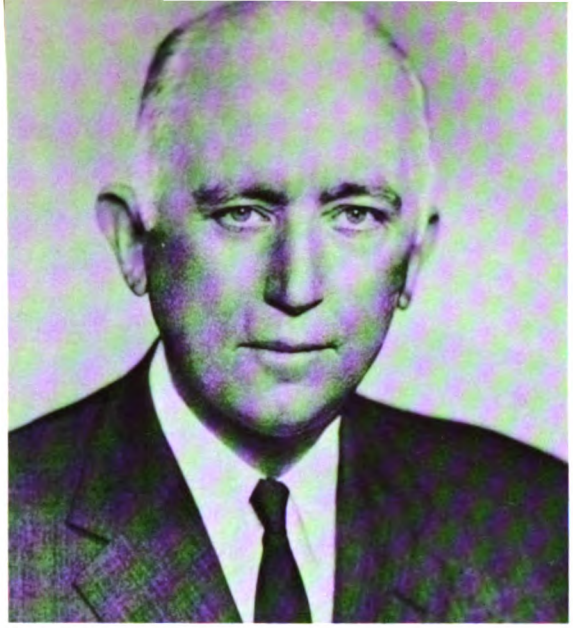
## BOARD O

EDGAR M. QUEENY
*Chairman of the Finance Committee*





DILLON ANDERSON



JOHN L. CHRISTIAN

## DIRECTORS

FREDRICK M. EATON

JOHN L. GILLIS

CARROLL A. HOCHWALT

HERBERT HOOVER JR.

EDWARD A. O'NEAL JR.

## DIRECTORS

WILLIAM W. SCHNEIDER

FELIX N. WILLIAMS

ALAN H. TEMPLE

FOR REPORTS

BEGINNING WITH

19 61

PLEASE CONSULT

MICROCARD EDITION

# DIRECTORS AND OFFICERS

## BOARD OF DIRECTORS

| | |
|---|---|
| Charles Allen Thomas, *Chairman* | St. Louis |
| Dillon Anderson | Houston |
| John L. Christian | St. Louis |
| Fredrick M. Eaton | New York |
| John L. Gillis | St. Louis |
| Carroll A. Hochwalt | St. Louis |
| Herbert Hoover Jr. | Los Angeles |
| Edward A. O'Neal Jr. | New York |
| Edgar M. Queeny | St. Louis |
| William W. Schneider | St. Louis |
| Charles H. Sommer | St. Louis |
| Alan H. Temple | New York |
| Felix N. Williams | St. Louis |

## EXECUTIVE COMMITTEE

Charles H. Sommer, *Chairman*

| | |
|---|---|
| John L. Christian | Edgar M. Queeny |
| John L. Gillis | William W. Schneider |
| Carroll A. Hochwalt | Charles Allen Thomas |

Felix N. Williams

## FINANCE COMMITTEE

Edgar M. Queeny, *Chairman*

| | |
|---|---|
| Fredrick M. Eaton | Charles H. Sommer |
| Herbert Hoover Jr. | Alan H. Temple |
| William W. Schneider | Charles Allen Thomas |

### Transfer Agent

Morgan Guaranty Trust Company of New York

### Registrar

The Chase Manhattan Bank

## OFFICERS

| | |
|---|---|
| Charles H. Sommer | *President and Chairman of the Executive Committee* |
| Charles Allen Thomas | *Chairman of the Board of Directors* |
| Edgar M. Queeny | *Chairman of the Finance Committee* |
| John L. Christian | *Vice President* |
| John L. Gillis | *Vice President* |
| Carroll A. Hochwalt | *Vice President* |
| William W. Schneider | *Vice President* |
| Felix N. Williams | *Vice President* |

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| | |
|---|---|
| H. Harold Bible | *Vice President* |
| Edward J. Bock | *Vice President* |
| Robert M. Morris | *Vice President* |
| Robert K. Mueller | *Vice President* |
| Irving C. Smith | *Vice President* |
| Tom K. Smith Jr. | *Vice President* |
| Erwin G. Somogyi | *Vice President* |
| J. Russell Wilson | *Vice President* |
| Marshall E. Young | *Vice President* |

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|---|---|
| Edwin J. Cunningham | *Controller* |
| Edwin J. Putzell Jr. | *Secretary* |
| Patrick J. Dowd | *Treasurer* |

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|---|---|
| Lloyd R. Cole | *Assistant Controller* |
| Walter C. Thilking | *Assistant Controller* |
| Earl J. Wipfler | *Assistant Controller* |
| Charles E. Caspari Jr. | *Assistant Secretary* |
| John N. Ehlers | *Assistant Secretary* |
| Franklin C. Rehfeld | *Assistant Secretary* |
| John F. Martin | *Assistant Treasurer* |
| J. Robert Matlock | *Assistant Treasurer* |
| Rolla H. Stocke | *Assistant Treasurer* |

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### Regional Vice Presidents

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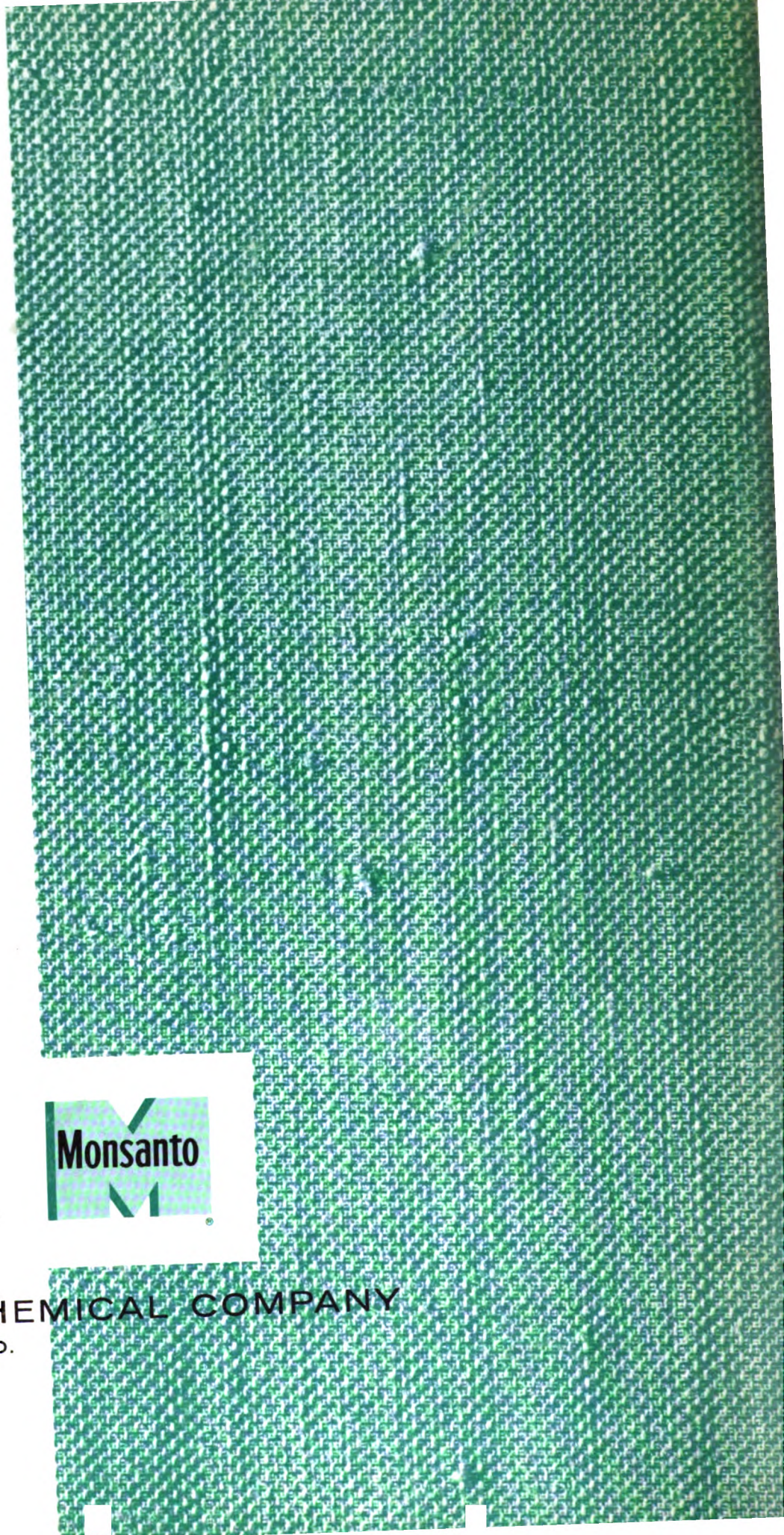
|---|---|
| Roy L. Brandenburger | Edward W. Gamble Jr. |



Monsanto

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